



# 3 Arctic Flora and Fauna

## Objective of this lesson:

- To examine how Arctic plants and animals have adapted to survive harsh weather conditions

## Time:

60 minutes

## Age:

KS2 Years 4-6

## Materials:

- Inflatable globe
- Climate zone map
- Biome cards
- Adaptation cards

## National Curriculum Objectives KS2:

Describe and understand key aspects of physical geography, including climate zones, biomes and vegetation belts

## Starter

If students have not been on the Giant Floor Map in a previous lesson, allow them time to explore the map and make their own connections. Encourage them to look for familiar place names and geographic features. Ask students to determine the type of map they are looking at (physical) and what they think each colour represents.

Explain that the Giant Floor Map is a circumpolar map. Distribute the hand-held legends and allow students time to explore the map again and draw new conclusions.

Using the inflatable globe as a demonstration tool, have students name and locate the continents and find the United Kingdom. Next, turn the globe so that the North Pole is facing students (circumpolar view). Identify some of the countries and points of interest on the globe and have students find these places on the Giant Floor Map.

## Climate zones

Explain to students that there are three major climate zones on Earth: tropical, temperate and polar. Explain that the temperatures in these zones are determined by latitude.

Have students examine the climate zone map. Ask students which climate zone(s) is/are shown on the Giant Floor Map? Explain that the Giant Floor Map encompasses the polar zone and a small portion of the temperate zone. Discuss the differences between these two zones.

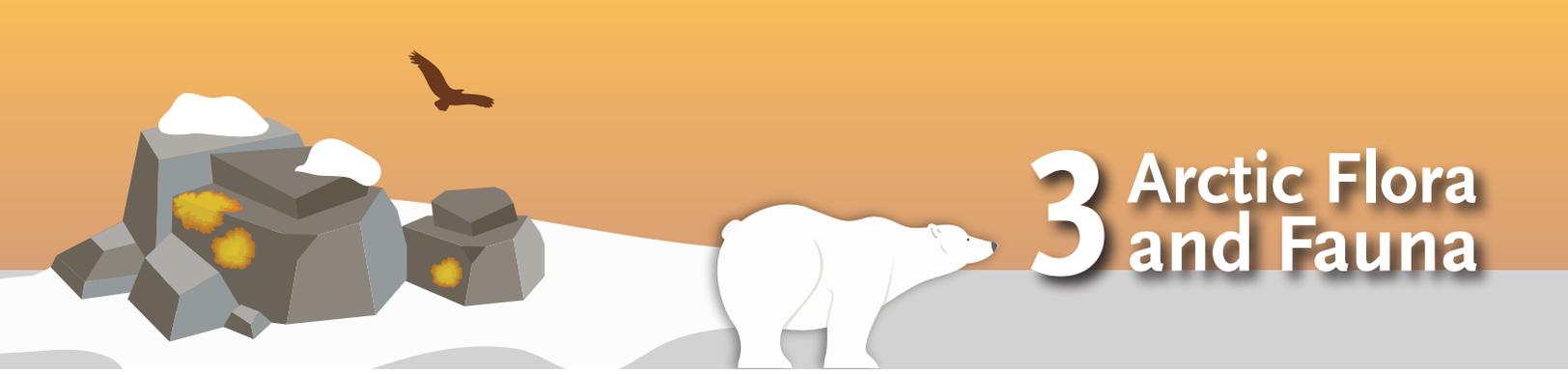
## Biomes

Ask students to define the word “biome.” If they are unsure, place the laminated biome cards on the Giant Floor Map and ask them again. Explain that biomes are large communities of plants and animals that occupy distinct regions based on climate, relief, geology, soil and vegetation. There are five main biomes on Earth: desert, aquatic, forest, grassland and tundra. Biomes can be found over a range of continents and play very important ecological roles. For example, the aquatic biome comprises both fresh and salt water, is home to millions of fish species, supports life on Earth and is responsible for the water cycle.

Ask students to make connections to biomes. Can they think of a desert biome? Have they visited one? Where might a forest or grassland biome be found?

Ask students to define the tundra biome. Explain that the word “tundra” comes from a Finnish word meaning “barren land.” The tundra is defined as a vast, flat, treeless region in which the subsoil is permanently frozen. This biome has very little rain, freezing temperatures, covers about one fifth of the Earth’s land surface and includes the Arctic Ocean, which is almost entirely enclosed. The tundra biome may be covered in snow for most of the year and has average temperatures of 2 C to 3 C in the summer and -35 C in the winter. Since trees and shrubs are unable to grow in such harsh conditions, the main vegetation in the tundra biome is moss and lichen. Explain to students that the circumpolar Giant Floor Map shows mainly the tundra biome.





# 3 Arctic Flora and Fauna

## Adaptation

Ask students how animals, including humans, protect themselves from their environment (i.e., keep warm or keep cool). Next, have students find one location on the map and ask them what they would pack to visit this place in the summer and in the winter, reminding them of the average temperatures. Ask your students how and why their choices changed with different seasons. Discuss the factors that are important to the survival of animals, including humans, in the Arctic's climate.

Have students define the terms “flora” and “fauna.” Explain that flora means the plants of a particular region or period and fauna means the animals of a particular region or period. Arctic flora and fauna have adapted over hundreds of years to be able to survive in harsh environmental conditions. As a class, discuss how the characteristics and behaviours of flora and fauna help them survive in an environment. Why might it be challenging for plants and animals to survive in the tundra? How do they think plants and animals have adapted in order to survive in the tundra?

Divide the class into pairs and have them stand along the border of the map. Distribute one adaptation card to each pair. Allow students time to examine the card, read the information on the back and locate an area on the Giant Floor Map where their species can be found. Ask students to consider what kind of environment their species inhabits and how it is able to survive.

Explain to students that there are two kinds of adaptation: behavioural and biological. An example of behavioural adaptation is when a bird lays its eggs on a steep cliff to protect them from predators; it is a behaviour that is the result of a long evolutionary process to protect the species. An example of a biological adaptation is a polar bear's thick fur, which protects it from frigid temperatures; it is a physical change evolved over time that helps the species survive in an environment. Ask students which type of adaptation they think relates to their species and whether it has adapted in both ways (behavioural and biological).

While walking around the Giant Floor Map, have existing pairs of students form groups of four with another pair whose species has undergone a similar adaptation (behavioural or biological) to their own (e.g., both the Arctic fox and Arctic hare use camouflage to avoid predators). Ask groups to share their species' adaptation strategies with the class and discuss any patterns and trends. Discuss whether plant and animal species can adapt to their environment in more than one way, and if plants and animals have similar adaptation strategies. Have students discuss which type of adaptation relates most to humans living in the Arctic and consider how people can inhabit virtually every corner of the Earth, except the deepest parts of the oceans.

## Plenary

Have your students use the Giant Floor Map to answer the following questions:

- What are the Earth's three main climate zones?
- What is a biome?
- What are the five biomes found on Earth?
- What is the tundra biome?
- What is the difference between the two different types of adaptation (biological and behavioural)?

Ask students specific questions about certain plants and animals. (E.g., How has purple saxifrage adapted to survive the Arctic climate? Why is a baby harp seal's fur pure white?)