360 VIRTUAL TRIPS TO ALBERTA'S ECOREGIONS

GRADE 9 SCIENCE
PLANT AND ANIMAL ADAPTATIONS

CREATE AN ACCOUNT AT WWW.ALBERTATOMORROW.CA

THE BASICS

Time Required: Approximately a 60 min period

Materials: Computer with Internet Connection, Student Handout, Headphones (optional)

Background Info: https://www.albertaparks.ca/media/6256258/natural-regions-subregions-of-alberta-a-framework-for-albertas-parks-booklet.pdf

PROCEDURE:

STUDENTS MUST CREATE AN ACCOUNT AT WWW.ALBERTATOMORROW.CA TO ACCESS THE 360 ECOREGION TOURS.

Plants and Animals that live in different parts of Alberta are specially adapted to be able to survive in that environment. That is, they have special traits that allow them to survive and thrive in that environment. For example, some animals change colour with the season to help them blend in or camouflage in their environment. The Snowshoe Hares change from having white fur in the winter to having brown fur in the summer. Unfortunately for the hare, there is a time in the spring and fall that they may not be the right colour for their environment!

Alberta has 6 natural ecoregions. Some plants and animals can be found in all 6 regions, but others are only suited for life in one region. For example, the Short Horned Lizard is only found in the Grasslands in Alberta. It regulates its body temperature by moving into hot sunny areas or into the shade. It cannot survive in the cooler Boreal Forest.

In this lesson you will explore the plants and animals in all 6 ecoregions within Alberta, learn how they are specially adapted to living there, what human activities affect their survival and which species are at risk in each ecoregion. You may have to look around a bit, and maybe even up or down! You can zoom in and out to get a better look at the vegetation and features in each ecoregion.Remember to turn on the sound to get the full immersive experience. Have Fun!

CURRICULUM LINKS:

GR. 9 SCIENCE- BIOLOGICAL DIVERSITY -

- INVESTIGATE AND INTERPRET DIVERSITY AMONG SPECIES WITHIN SPECIES AND DESCRIBE HOW DIVERSITY CONTRIBUTES TO SPECIES SURVIVAL.
- IDENTIFY IMPACTS OF HUMAN ACTION ON SPECIES SURVIVAL AND VARIATION WITHIN SPECIES, AND ANALYZE ISSUES FOR PERSONAL AND PUBLIC DECISION MAKING

OBJECTIVES:

- STUDENTS WILL DESCRIBE HOW PLANTS AND ANIMALS ARE ADAPTED TO LIFE IN EACH NATURAL ECOREGION OF ALBERTA.
- STUDENTS WILL IDENTIFY RISKS TO SPECIES SURVIVAL IN EACH ECOREGION.
- STUDENTS WILL IDENTIFY SPECIES AT RISK IN EACH REGION

Variation and diversity is essential for species survival. Both variation *within* species, and variation *between* species are important.

For example, not every individual in a population is identical. There is variation *within* the species.

Similarly, not all different species look the same. This is variation *between* species. They have characteristics that allow them to survive in their habitat (the environment in which they live) and their niche (the role they play in that environment) Their niche may include what they eat, when they are active ie day or night, or what other species they depend on for their survival (symbiotic relationships)

Adaptations are changes within an organism or species that make them better suited to survive in that environment. If they survive, the can reproduce. If they reproduce, they pass on these genetic traits to the next generation.

There are **2 types** of adaptation.

Giraffes have evolved over time to have long necks to eat leaves at the tops of trees. This type of adaptation is called a **structural adaptation** because it is a physical characteristic of the organism that allow them to reach high trees, an area where other animals cannot, and therefore survive and flourish in that environment. Other examples include camouflage, mimicry, or dimorphism.

The pattern that these geese fly in is a **behavioural adaptation**. Geese do this as a result of the changing weather. Geese migrate with the changing seasons.

The recognizable V formation is not to just allow geese to see something other than the back of the bird in front of them. As the birds fly and their wings, it creates lift for their fellow birds, allowing them to fly further with less effort. They will therefore live through the migration, and pass this behavioural trait on to the next generation.

ALBERTA'S PLANTS AND ANIMALS: HOW THEY ARE ADAPTED TO LIFE WHERE THEY LIVE

1. Register for an account at www.albertatomorrow.ca
2. Log in and find the Camera Icon on the Left Hand Side to see all 6 Ecoregion Virtual Tours
3. For each Ecoregion you may need to search the following icons :
   a. Animals
   b. Plants
   c. Resource and Land Use
   d. Species at Risk
   e. Did you know

EXTENSION:

1. Explore the other Icons within each Ecoregion:

2. Choose one Ecoregion and describe each of the following: Ecoregion Name: _____

Location:

Landforms:

Climate:

Plants:

Animals:

Resources:

Did You Know?

Species at Risk:

3. Design and Draw a New Animal for the Eoregion that would have at least 2 adaptations that allow it to survive in that ecoregion. Write a paragraph describing the type of adaptation, and how it helps the organism.

Boreal Forest

Name:_____

1.List 4 different plants that live in the boreal forest.

2. What type of adaptation do Pine Sap and Coral Roots have: Structural / Behavioural? Describe it.

3. Explain how this adaptation helps them species survive.

4. Describe this symbiotic relationship.

5. How would the white spruce having shallow roots be both an advantage, and a disadvantage?

6. Find the westslope cutthroat trout. What factors are contributing to its "at risk" status?

7. What can be done to help the survival of this species?

8. List 4 other species at risk.

9. List the factors that are contributing to their at risk status

Grassland

Name:_____

1.How is pasture sage adapted to life on grasslands?

2. What is the name of Alberta's native cacti? List one structural and one behavioural adaptation they have.

3. List 5 other native plant species on grasslands.

4. Identify 2 adaptations the prairie crocus has to life on grasslands.

5. What's the name of Alberta's only venomous snake? Is the rattle a structural or behavioural adaptation?

6. List 5 species at risk on the grasslands and describe what human activity is contributing to their at risk status.

7. Describe at least 2 ways the pronghorn antelope are adapted to life on the grasslands.

Rocky Mountains

Name:_____

1. Within the Rocky Mountain region you will find different plants growing depending on the elevation . Describe 2 lower elevation plants and 5 higher elevation plants.

2. Grizzlies have special adaptations that allow them to exploit the resources in the areas in which they live. Describe 3 examples

3. List 4 other animals that live in the Rocky Mountain region.

4. Identify at least 5 species at risk in the Rocky Mountain Region.

5. How is Kinnikinnick, or bearberry, adapted to life in the Rocky Mountains?

Aspen Parkland

Name:_____

1. List 5 animals common to the Aspen Parkland.

2. Why do fawns have spots specifically? Is this a behavioural or structural adaptation?

3. Trembling aspen are the most dominant tree in this ecoregion, as the name suggests. They are perfectly adapted to fires that were more common on the prairies 100 years ago than they are now. How are aspens specifically adapted to co-exist with fire?

4. List 3 other common plants in the Aspen Parkland.

5. Research at least 4 examples of how beavers are adapted to their environment.

6. Peregrine Falcons were once more common in North America than they are now. Describe what happened to populations in the 1940's 50's and 60's.

Foothills

Name:_____

1. List 4 animals common to the Foothills.

2. How are Wolverine specially adapted?

3. How are beavers adapted to their wet life?

4. List 3 ways you can distinguish between a grizzly bear and black bear. Research how your reaction to a bear encounter should be different too!

5. Discuss why the Bull Trout is a species at risk.

6. Discuss why the Wester Blue Flag is also at risk.

7. Also a species at risk, the Trumpeter Swan is specially adapted to living in cold temperatures. Describe.

8. List 4 other plant species in the Foothills region and describe how Rough Fescue is adapted to life in this region.

Canadian Shield

Name:_____

1. Describe how the Jack Pine and Labrador Tea are perfectly adapted to life on the nutrient poor shield.

2. Is Reindeer Moss a moss?

3. Describe in detail 4 animal species living in the Canadian Sheild.

4. Why are Woodland Caribou at risk?

5. How easy would it be to find the Short Jaw Cisco?

6. Describe in detail the symbiotic relationship found within Lichens.

Summary Questions: Name:_____

1. Describe the difference between diversity between species and diversity within species.

2. What is diversity important and how does it contribute to the survival of species?

3. Biodiversity doesn't just help a species survive, but it also helps ecosystems survive. This is because more diverse areas are able to tolerate environmental change. Give 2 examples of how a less diverse ecosystem is less able to tolerate environmental change.

4. Give an example of 2 closely related species that live in the same ecoregion, yet occupy different niches. How is it that they are able to survive in the same ecosystem?

5. Give one example of a symbiotic relationship you discovered in the 360 Virtual Field Trips.

6. The Swift Fox is a species at risk in Alberta. Research strategies that have been used in Alberta to help the population of Swift Fox. Have they been effective?

7. Woodland Caribou are a threatened species in Alberta. Research how they are specially adapted for cold and snow: https://animals.mom.me/caribou-adaptations-tundra-7556.html
https://www.coolantarctica.com/Antarctica%20fact%20file/wildlife/Arctic_animals/arctic-reindeer-caribou.php

Describe how each of the following adapatations: Feet, Muzzle & Nose, Fur, Ears &Tail , Arteries/Veins , Digestive System, Vision, Behaviour (3 things)