

**LESSON: Weathering the Winter****GRADE: 5th****TIME: 45 min.****SUMMARY:**

During this lesson, students are asked to think of how prairie animals utilize energy to overcome the challenges of cold weather. Inside the field leader will ask how prairie animals survive winter. Using the students' answers, the leader will emphasize hibernation, migration, staying active, and other survival techniques. Students will use nature journals to look for examples of these techniques outside. Afterwards, the class will come back inside and write and share a paragraph summarizing the winter survival techniques of one animal they encountered.

OBJECTIVES: Iowa Core**Science****Energy**

- **5-PS3-1** Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

Literacy**Speaking and Listening**

- **SL.5.1.** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 5 topics and texts, building on others' ideas and expressing their own clearly.
- **SL.5.4.** Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

Writing

- **W.5.1.** Write opinion pieces on topics or texts, supporting a point of view with reasons and information.
- **W.5.8.** Recall relevant information from experiences; summarize or paraphrase information in notes and finished work.



MATERIALS & RESOURCES:

- Blank paper or nature journals
- Pencils
- Clip boards

PRESENTATION:

Explain to students that today they are going to use their knowledge about prairie animals and evidence they find outside to decide how these animals survive winter. Write the question “how do prairie animals survive winter” on the board. Ask student volunteers for answers. Then ask what kinds of animals they think would use these techniques.

DIRECTIONS:

1. Tell students they will be using their nature journals/paper to record data that will help them answer the question written on the board. Help students prepare their journal entries by modeling on the board. Have students split a page of their nature journals into four boxes and label each box with hibernation, migration, stay here and stay active and dormant stages egg/larva. Use the attached data sheet as a guide or make copies to hand out to students. Ask students what they think will be the most important observations to record while outside. Provide an example, such as bison, to further show students what information they should record. Advise students to answer some of the questions below:
 - How does the animal prepare to migrate or hibernate?
 - What does the animal eat? Does it store food?
 - How does the animal stay warm?
 - From where does the energy for these survival behaviors come? How does it get from sun to animal?
2. Explain to students that they should record detailed information and answer these questions. Emphasize that when the students return inside they will use the information to write a paragraph (2-3 sentences) about how one animal that they discovered survives winter.



3. Tell students that they are now almost ready to go outside to explore. Put students into small groups, and put an adult leader with each group if possible. When the class gets outside, the field leader will lead groups on a hike to investigate different animals and signs of wildlife. While journaling, students should try to be quiet, so that each naturalist can think about their questions and concentrate on their observations.
4. Have all the groups form a single file line to get ready to head outside. Make sure that the students have all of their materials. Remind students that naturalists are happy outside, explorers, adventurers, respectful, prepared, responsible and quiet. They ask questions, use words, numbers and pictures, and share their discoveries.
5. When outside, search for wildlife or signs of wildlife. Encourage students to look around them and point out their observations to the field leader and members of their group. Once an animal has been spotted, ask students to record it in their nature journals. Ask students questions like how does this animal stay warm? What does it eat? Is that different from summer? How does it stay warm? Does it change appearance? Where does it go?
6. When the hike is over, ask students and adult chaperones to line up to head back inside. Instruct students that while they are walking inside, they should think about the discoveries they made and get ready to share them with the other naturalists.
7. Ask the students to choose one animal they found interesting. Ask them to write at least two sentences answering the question “how does the animal survive winter”. Encourage students to also write about things they discovered or anything that surprised them.
8. Ask student volunteers to share the paragraph they wrote. Be sure to ask students how they came to their conclusions or what evidence they collected that supports their answers. Discuss how their observations help explain where animals get enough energy for survival during winter months.



Alternative Lesson Activities

If more time is available or weather doesn't permit going outside, use these suggestions for other activities.

1. Use bones and furs of the bison to allow students to make educated guesses about how bison survive winter.
 - There are rugs with both winter and summer bison coats to discuss adaptations that allow them to stay warm.
 - Use the bison skull to discuss how bison forage for food.
 - Show examples of bison scat to discuss the difference between summer and winter food availability and diet changes.
 - Explain how free roaming bison may move to different areas during the winter months.

Gather different animal furs, bones, scat, and other artifacts. Divide these between each group. Allow students time to decide how these animals might survive winter based on the evidence they have in front of them.

REFLECTION/JOURNAL PROMPT:

At the end of the lesson, explain to students that today they discovered the challenges animals face during winter. Encourage them to look for more animals and evidence of animals preparing for winter as the fall continues. They don't even have to come to the prairie to track these changes; they can do it in their very own yard, at a park, or anywhere outside. Explain that the world needs more naturalists who will stop to think about animal's survival and that because they did such a good job today, they seem like perfect candidates.



Journal Example

Name:

Date:

Time:

Location:

Weather:

How do Prairie Animals Survive Winter?

Record the animals you find. Decide which method they use to survive winter, and write more information about what the animal does in that box. Use descriptions, illustrations and numbers.

Hibernate

Where? How does it prepare?

Migrate

Where does it go? How does it travel?

Stay Here & Stay Active

How does it find food? Does it eat different things? Store food? How does it keep warm? Does it change its appearance?

Winter as Egg or Larva

What life stage? Where does it hide?



Background Information

Animals survive winter by several different techniques. This lesson focuses on hibernation, migration, staying active and dormant stages (like remaining as an egg or in a chrysalis) and the flow of energy for these techniques of survival. The meanings of some these terms are often debated upon between professionals. For the purpose of this lesson please use the information below to guide the details you provide students. If your students are more advanced, provide more in depth definitions.

Hibernation vs. Torpor

There are three major types of dormancy in animals: hibernation, aestivation, and torpor. Generally students at this level do not differentiate between hibernation and torpor.

Aestivation occurs in animals during the summertime in hot and dry climates. Hibernation, on the other hand, primarily occurs during cold winter months. It is characterized by reduced metabolic rate and body temperature over long periods of time. Torpor is very similar to hibernation but occurs for periods no longer than 24 hours. Therefore, the major difference between torpor and hibernation is the length of dormancy.

Most animals in Iowa don't truly experience hibernation, but one good example is the woodchuck (groundhog). Animals such as squirrels, badgers, raccoons and many other small rodents experience torpor. These animals are often active during warmer days but may stay sheltered on very cold days.

Migration

Many animals migrate or travel to another region during the winter months. On the prairie most of these animals are birds. Another animal that migrates is the monarch butterfly.

Stay Active

Several prairie animals do not migrate or hibernate. These animals have special adaptations that allow them to survive the winter. Examples of animals that stay include bison, elk, coyotes, deer and foxes. Many of these animals grow thicker fur and change food sources.



8/10/16

Teachers-Going-Green.com

Weathering the Winter / Science & Literacy

This lesson is a part of Project Bluestem at Neal Smith National Wildlife Refuge

Dormant Stages

Insects have several techniques to survive winter, but many of them include a dormant stage. Some caterpillars may spend the winter as a chrysalis. Other insects may remain as eggs throughout the winter. Adult crickets, for example, will die before winter comes, but their eggs will remain until spring when they turn into adults.

A common example students may have seen is the survival of boxelder bugs. This insect searches for warm areas often times in homes or buildings. They will remain in these areas largely inactive, until the spring.

Appropriate Literature

My Side of the Mountain, Jean Craighead George

Brian's Winter, Gary Paulsen

To Build A Fire, Jack London

Call of the Wild, Jack London