

# National Elk Refuge Education Lesson Plans



# Animals Over Winter

## Lesson Overview

The educational focus of the program is how animals adapt to the challenges they experience during winter.

## Suggested Age Level

Second – Seventh grade

## Lesson Length

Approximately 30 - 45 minutes

## Setting

The lesson is an indoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Define habitat, adaptation, migration, resist, hibernation, metabolism, winter kill, ground hair, and guard hair.
- Differentiate between physical and behavioral adaptations.
- Explain why adaptations are critical to an animal's survival in its natural habitat.

- Describe at least two stresses animals experience during winter that may affect their survival.
- Identify the primary adaptive strategy employed during winter by at least four animals found in the Greater Yellowstone Ecosystem.
- Explain why it is important not to disturb wintering wildlife.

## Lesson Activities

The lesson consists of an interactive presentation and activities that reinforce lesson objectives and content. Participants will have the opportunity to examine pelts and fur swatches. Animals found in the Greater Yellowstone Ecosystem are featured.



# Animalympics

## Lesson Overview

Participants will complete an eight page *Animalympics* booklet or a portion of the booklet that provides activities that compare their physical abilities with wild animals found on the National Elk Refuge. Participants keep the completed booklets. The concept of adaptation will be introduced and reinforced throughout the program. Optional props that enhance participants understanding of featured animals may be utilized.

## Suggested Age Level

First - Seventh grade

## Lesson Length

Approximately two hours to complete activities for all eight animals for a group of approximately 20 participants. The lesson can be adapted to accommodate individual lessons of shorter length.

## Setting

The lesson is conducted outdoors in a large open area. Some activities can be conducted indoors.

## Learning Outcomes

Upon completion of the program participants will be able to:

- Define adaptation.
- Explain why adaptation is important.

- Describe at least three special adaptations possessed by animals found on the National Elk Refuge.
- Explain why the three adaptations described by participants are critical to the animal's survival.
- Compare their physical abilities to at least three animals found on the National Elk Refuge.

## Theme

Animals have developed special physical or behavioral adaptations (traits or skills) that help them survive in the wild.

## Lesson Activities

Any or all of a variety of activities are completed that compare participants physical abilities to wild animals including:

- Jumping a measured vertical distance (bison)

- Leaping forward a measured distance (mountain lion)
- Counting the number of times they can flap their arms in 10 seconds and taking their pulse (hummingbird)
- Running a timed distance of 45 yards (pronghorn)
- Spotting a toy mouse from a distance (bald eagle)
- Measuring the breadth of their arm span (trumpeter swan)
- Holding their breath for a timed period (moose)
- Running on their tip toes for 25 yards (elk)
- Guessing the weight of an elk antler (elk)
- Holding an elk antler on their head (elk)
- Trying to identify where a special "click" made by elk front legs comes from (elk)



# Antlers and Horns

## Lesson Overview

The lesson will compare and contrast antlers and horns. Basic anatomy and functions will be presented. The focus is antlers and horns of mammals found in the Greater Yellowstone Ecosystem.

## Suggested Age Level

Second – Seventh grade

## Lesson Length

Approximately 30 minutes

## Setting

The lesson is an indoor activity.

## Learning Outcomes

Upon completion of the lesson the participant will be able to:

- List two functions of antlers and horns.
- Compare and contrast at least three characteristics of antlers and horns.
- Be able to name three mammals in the Greater Yellowstone Ecosystem that have antlers.

- Be able to name three mammals in the Greater Yellowstone Ecosystem that have horns.

## Theme

While antlers and horns have basically the same functions, there are significant differences between them.

## Lesson Activities

The lesson consists of a presentation on the natural history of antlers and horns including

functions, basic anatomy, composition and growth. Similarities and differences will be discussed. Participants will have the opportunity to observe and examine real and replica specimens of antlers and horns from mammals found in the Greater Yellowstone Ecosystem. An activity is included to reinforce the information presented and give the participants the opportunity to compare and contrast antlers and horns.



# Bird Beak Buffet

## Lesson Overview

The educational focus is on the shape and function of bird beaks as adaptations specific to habitats and food sources.

## Suggested Age Level

Second – Sixth grade.

## Lesson Length

Approximately 30 - 60 minutes depending on group size.

A shorter version that takes 20-25 minutes is also available.

## Setting

The lesson is an indoor or outdoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Define adaptation.
- Define habitat and name the four elements of a habitat.
- Explain why adaptation is crucial to an animal's survival.
- Describe two functions of bird beaks.

- Describe two structural features of bird beaks.
- Compare and contrast three types of bird beaks and how they function to provide access to food.
- Explain the vital role birds play in the environment.
- Describe two actions that can be taken to protect and conserve birds and their habitats.

## Theme

Birds use specially adapted beaks to obtain the food found in their habitat.

## Subtheme

*Birds play a vital role in the environment.*

## Lesson Activities

Participants will use everyday objects that model different bird beaks to gather various “foods.” As they gather the foods, participants will place the food in a bird’s “stomach.” Participants will discover which beaks are best adapted to gathering different types of food. Participants will match the beaks with appropriate birds and their primary food.



# Bird Hurdles Obstacle Course

## Lesson Overview

Participants will engage in an obstacle course designed to mimic the hazards migratory birds face during their annual journeys. The primary focus will be about man-made hazards to migration and what can be done to mitigate them.

## Suggested Age Level

Pre-kindergarten - adult

## Lesson Length

Variable depending on group size

- For a group of twenty approximately 40 minutes
- Introduction – 10 minutes
- Obstacle course explanation and walk through – 5 minutes
- Run course – 1 minute per participant
- Wrap up and close – 5-10 minutes

## Setting

The lesson is an outdoor activity. The ideal location is Murie Family Park at the Jackson Hole

& Greater Yellowstone Visitor Center on the National Elk Refuge.

## Learning Outcomes

Upon completion of the lesson, participants will be able to:

- Define migration.
- Name two natural hazards or obstacles to migration.
- Name three man made hazards or obstacles to migration.
- List two specific actions that can be taken to mitigate man made hazards or obstacles to migration.

## Theme

During migration birds face numerous hazards

and obstacles that threaten their survival.

## Lesson Activities

The instructor will present a brief overview on bird migration as a behavioral adaptation. Participants will complete an obstacle course that is designed to demonstrate some of the man-made hazards or hurdles to migration. At each station in the obstacle course, participants will learn how the hazard impacts bird migration. Participants will discuss specific actions that can be taken to mitigate man-made hazards or obstacles to migration.



# Build a Bison

## Lesson Overview

The instructor will “build a bison” by decorating a group member with various props that are humorous representations of bison anatomy. The educational focus is the role the anatomical structures play in bison adaptations.

## Suggested Age Level

Kindergarten – Fifth grade

## Lesson Length

Approximately 30 – 45 minutes

## Setting

The lesson is an indoor or outdoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Define adaptation.
- Define two of the following: mammal, herbivore, keratin, ruminant, ungulate.
- Explain why adaptation is crucial to an animal’s survival.

- Name two specific physical adaptations possessed by the bison.
- Explain the role the adaptations play in the bison’s survival in the wild.
- Explain the important role the bison plays in its natural environment (optional).

## Theme

The bison possesses specific physical adaptations that facilitate its survival in the wild.

## Subtheme

*The bison plays an important role in the health and proper functioning of its environment.*

## Lesson Activities

The instructor will present a brief overview of the bison, its natural history and role in the environment. A participant will be selected to be the bison and will be dressed by the

instructor. Participants will be picked to select props they believe represent the physical adaptations of the bison. Specific adaptations and vocabulary words will be discussed as the bison is dressed. If age appropriate, participants may be selected to read information about the physical adaptations.



# Build a Duck

## Lesson Overview

Participants or the instructor will “build a duck” by decorating a group member with various props that are humorous representations of duck anatomy. The educational focus is the role the anatomical structures play in duck adaptations.

## Suggested Age Level

Kindergarten – Seventh grade

## Lesson Length

Approximately 30-45 minutes

## Setting

The lesson is an indoors or outdoors activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Explain why adaptation is crucial to an animal’s survival.
- Describe two functions of bird and duck bills.
- Compare and contrast down feathers, contour feathers, flight feathers.
- Define three of the following: adaptation, warm-blooded, vertebrate, water fowl, habitat, nictitating membrane, carnivorous, herbivorous, omnivorous, lamellae, down feathers, contour feathers, flight feathers, air sacs (some words

may not be age appropriate for younger participants).

- Explain the role hollow bones play in birds and ducks ability to fly.
- Name two specific physical adaptations possessed by ducks.
- Explain the role the adaptations play in facilitating survival of ducks in the wild.
- Describe two actions that can be taken to protect and conserve ducks and their habitats.
- Explain the vital role the ducks play in their natural environment.

## Theme

Ducks possess specific physical adaptations that facilitate their survival in the wild.

## Subtheme

*Ducks play a vital role in the health and proper functioning of their ecosystem.*

## Lesson Activities

The instructor will present a brief overview of ducks, their natural history and role in the environment. A participant will be selected to be the duck and will be dressed by the instructor or participants. Participants select props they believe represent the physical adaptations of the duck. If age appropriate, participants will read definitions or concepts from cards distributed during the class. Specific adaptations and vocabulary words will be discussed as the duck is dressed.



# Build a Wolf

## Lesson Overview

Participants or the instructor will “build a wolf” by decorating a group member with various props that are humorous representations of wolf anatomy. The educational focus is the role the anatomical structures play in wolf adaptations.

## Suggested Age Level

Kindergarten – Fifth grade

## Lesson Length

Approximately 30 minutes

## Setting

The lesson is an indoors or outdoors activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Define adaptation.
- Explain why adaptation is crucial to an animal’s survival.
- Define carnivore, predator, guard hair, ground hair, canine teeth, tapetum

lucidum, digitigrade (some vocabulary may not be age appropriate for younger participants).

- Name two specific physical adaptations possessed by the wolf.
- Explain the role the adaptations play in the wolf’s survival in the wild.
- Explain the vital role the wolf plays in its natural environment (optional).

## Theme

The wolf possesses specific physical adaptations that facilitate its survival in the wild.

## Subtheme

*The wolf plays a vital role in the health and proper functioning of its ecosystem.*

## Lesson Activities

The instructor will present a brief overview of the wolf, its natural history and role in the environment. A participant will be selected to be the wolf and will be dressed by the instructor or participants. Participants select props they believe represent the physical adaptations of the wolf. Specific adaptations and vocabulary words will be discussed as the wolf is dressed.



# Build an Elk

## Lesson Overview

The instructor will “build an elk” by decorating a group member with various props that are humorous representations of elk anatomy. The educational focus is the role anatomical structures play in elk adaptations. Additional discussion will focus on the role elk play in the environment and the importance of conservation.

## Suggested Age Level

Kindergarten – Fifth grade

## Lesson Length

Approximately 30 – 45 minutes

## Setting

The lesson is an indoor or outdoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Define adaptation.
- Define two of the following: mammal, ecotone, herbivore,

keratin, ruminant, ungulate, migratory.

- Explain why adaptation is crucial to an animal’s survival.
- Name two specific physical adaptations possessed by elk.
- Explain the role the adaptations play in the survival of elk in the wild.
- Explain the important role elk play in their natural environment.
- Discuss two actions that can be taken to conserve elk.

## Theme

Elk possess specific physical adaptations that facilitate their survival in the wild.

## Subtheme

*Elk play an important role in the health and proper functioning of their environment.*

## Lesson Activities

The instructor will present a brief overview of elk, their natural history and role in the environment. A participant will be

selected to be the elk and will be dressed by the instructor. Participants select props they believe represent the physical adaptations of the elk. Specific adaptations and vocabulary words will be discussed as the elk is dressed. If age appropriate, participants may be selected to read information about the physical adaptations.

# Feature Creature: Rocky Mountain Elk

## Lesson Overview

The program consists of a presentation on the natural history of Rocky Mountain Elk and an activity that will reinforce program content. Participants will have the opportunity to examine fur swatches, antlers, hooves and skulls from Rocky Mountain Elk.

## Suggested Age Level

Second – Seventh Grade

## Lesson Length

The program is approximately 20 - 30 minutes.

Combine with another Feature Creature for a 40 – 60 minute program.

## Setting

The program is an indoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Name three unique characteristics of Rocky Mountain Elk.
- Explain how the characteristics function as

adaptations that facilitate elk survival in the wild.

- Define three of the following: adaptation, cervid, wapiti, ungulate, herbivore, forage, ruminant, migration, prey species, antler, velvet antler, ecotone.
- Explain the important role elk play in keeping their habitat in balance.
- State three actions that can be taken to conserve and protect wildlife.
- State one action people can take to live responsibly with wild elk.

## Theme

Rocky Mountain Elk play an important role in the

Greater Yellowstone Ecosystem.

## Subtheme

*There are simple things people can do to protect and conserve wild elk and live responsibly with them.*

## Lesson Activities

The instructor will present a brief overview of Rocky Mountain Elk, their natural history and role in the environment. Vocabulary words will be woven throughout the program. Participants will examine specimens obtained from elk and identify how they function as adaptations to ensure the survival of elk in their natural habitat. There will be an activity that reinforces program content.



# Feature Creature: Trumpeter Swans

## Lesson Overview

The program consists of a presentation on the natural history of Trumpeter Swans and an activity that will reinforce program content.

## Suggested Age Level

Second – Seventh Grade

## Lesson Length

The program is approximately 20 – 30 minutes.

Combine with another Feature Creature for a 40 – 60 minute program.

## Setting

The program is an indoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Name three unique characteristics of trumpeter swans.
- Explain how the characteristics function as adaptations that facilitate the survival of trumpeter swans in the wild.

- Define three of the following: adaptation, cob, pen, cygnet, aquatic, dabbler, plumage, down, molt, incubation, precocial, fledge, forage, migration.
- Explain the important role trumpeter swans play in keeping their natural habitat in balance.
- Discuss three actions that can be taken to conserve and protect trumpeter swans and other wildlife.

## Theme

Dedicated conservation efforts, Federal laws and international treaties have saved trumpeter swans from the threat of

extinction they faced in the early 1900's.

## Subtheme

*There are simple things people can do to protect and conserve trumpeter swans and live responsibly with them.*

## Lesson Activities

The instructor will present a brief overview of trumpeter swans, their natural history and role in the environment. Vocabulary words will be woven throughout the program. Participants will compare their “wingspan” to that of a trumpeter swan. There will be an activity that reinforces program content.



# Fur, Hair, and Pelts

## Lesson Overview

The focus of the lesson is mammal fur, its structure and functions. Participants will be able to examine specimen pelts and fur swatches from various mammals of the Greater Yellowstone Ecosystem. The lesson includes a presentation and one or more activities.

## Suggested Age Level

Second – Seventh grade

## Lesson Length

Approximately 30 minutes

## Setting

The lesson is an indoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Describe the role hair or fur plays in an animal's survival.
- List the basic functions of animal fur.
- Define three of the following: insulation, keratin, pilo-erection, follicle, adaptation,

fur, hair, pelt, hide, ground hair, guard hair.

- Compare and contrast the two basic types of animal fur.
- Differentiate between samples of winter and summer coats from two mammals found in the Greater Yellowstone Ecosystem.
- Identify at least three specimens of pelts or fur swatches.
- State three actions that can be taken to protect and conserve wild animals and co-exist responsibly with them.

## Theme

The coats or fur found on mammals in the

Greater Yellowstone Ecosystem provide protection and insulation that facilitate their survival in the challenging environment.

## Lesson Activities

The lesson consists of a presentation on the natural history of mammal fur or hair including basic structure, functions, and the differences between summer and winter coats. Participants will examine both summer and winter pelts and swatches from various mammals. Activities are included that reinforce lesson content and give participants an opportunity to identify pelts and swatches.



# Great Elk Extravaganza

## Lesson Overview

The educational focus of the program is the natural history of elk throughout the year and how their behavior changes with the seasons. Adaptations, the challenges elk face throughout the year and barriers to migration will be emphasized.

## Suggested Age Level

Second – Seventh grade  
Limited to 12 participants

## Lesson Length

Approximately ninety minutes

## Setting

The program is an outdoor activity.

## Learning Outcomes

Upon completion of the program, participants will be able to:

- Define adaptation, habitat and migration.
- Name the four elements of a habitat.
- Describe one natural or environmental challenge elk

encounter during each season.

- Describe one natural physical change or adaptation specific to elk that occurs in each of the four seasons.
- Describe three challenges or barriers elk face during migration.
- Differentiate between natural and human caused challenges or barriers.
- Explain three actions that protect and conserve elk and other wild animals.
- Explain one action that can be taken to live responsibly with elk.

## Theme

Elk adapt to the natural seasonal changes that occur throughout the year.

## Subthemes

- *Elk face numerous natural and man-made challenges throughout the year.*
- *Elk must overcome numerous barriers*

*and challenges as they migrate between their winter and summer grounds.*

## Lesson Activities

Participants will become an elk herd and act out activities that focus on the physical and behavioral changes or adaptations that occur each season. The “herd” will migrate between summer and winter grounds and attempt to overcome common barriers to elk migration. Throughout the lesson the instructor will present basic information about the natural history of elk, the challenges they face and their role in the environment.

Participants will discuss actions that can be taken to protect and conserve elk and live responsibly with them.

# Where are the Elk? Migration Challenge

## Lesson Overview

The educational focus is overland migration of large mammals in the Greater Yellowstone Ecosystem. Migration of the Jackson Hole Elk herd is featured. Concepts of adaptation and the challenges faced by migratory wildlife will be emphasized.

## Suggested Age Level

Second – Seventh grade

## Lesson Length

Approximately 30 minutes

Can be adapted for a 15-20 minute lesson

## Setting

The lesson is an indoor or outdoor activity.

## Learning Outcomes

Upon completion of the lesson, participants will be able to:

- Define adaptation and migration.
- Explain why animals migrate.
- Differentiate between natural and human caused

barriers to overland migration.

- Describe two natural hazards or barriers faced by overland migratory animals.
- Describe three human caused hazards or barriers faced by overland migratory animals.
- Explain three actions that can be taken to protect elk and other animals during migration.

## Theme

Elk and other overland migratory animals must overcome numerous barriers, obstacles or challenges as they

migrate between their winter and summer grounds.

## Lesson Activities

The instructor will present a brief overview of migration as a behavioral adaptation. Barriers and challenges faced by overland migratory animals will be emphasized.

Participants will “migrate” as if they were in the Jackson Elk Herd on their way to the National Elk Refuge during fall migration. All participants will play a role in the migration activity, either as an elk or a barrier to migration.

