



Pryor Mountain Wild Horses at Crooked Creek
NPS Photo

Activity 3 Life Science

Bighorn Sheep and Wild Horses Pete Sawtell

Two of the large animals that you are likely to see in Bighorn Canyon are bighorn sheep and wild horses. These two very different creatures share the land and resources in Bighorn Canyon and in the Pryor Mountains to the west.

Bighorn sheep (*Ovis canadensis*) are one of four native sheep species in North America. It is thought that the ancestors of the bighorn crossed the Bering Land Bridge during the last ice age about 12,000 to 15,000 years ago. These ancient sheep then spread out from Alaska to Mexico and adapted to various environments. The sheep in our area evolved into Rocky Mountain Bighorn Sheep.

Bighorn sheep are sexually dimorphic. This means that there are differences between males and females. For instance, a male or ram can weigh up to 300 lbs, while a female or ewe may only weigh 150 lbs. The rams, have big curled

horns, while the ewes have much shorter horns that curve slightly.

After a six month pregnancy, ewes give birth in the spring to a single lamb. Lambs are born on steep slopes and cliffs called lambing areas, chosen to protect the lambs from predators. Lambs can walk within a few hours and are able to eat solid food within a week. A ewe and her lamb will congregate with other ewes and their young in groups of five to fifteen animals for added protection. These groups stay near the canyon year round.

At the age of 3, young rams leave this group and form bachelor groups of one to four similarly aged rams. The rams summer in the cool Pryor Mountains where vegetation is easy to find. During the rut in the fall, rams return to the canyon to battle and mate.

Continued on page 25

Bighorn Sheep and Wild Horses from page 24

Rams battle to prove dominance and to secure a chance to mate. They charge at each other, rearing up onto their hind legs and lowering their heads just before colliding at speeds up to 20 miles per hour. Bighorn rams have a double cranium, a unique adaptation that allows them to withstand the head trauma caused from these battles without serious injury. Their cranium is made up of two layers of skull with a soft, spongy material in-between that acts as a shock absorber for the brain.

The Pryor Mountain Wild Horses *Equus caballus* have a very different past than the bighorn sheep. The ancestors of modern horses were found in North America at the end of the Pleistocene era, the last ice age. They died out and horses continued to live only in the Old World. Then in the 1500's and 1600's, the Spanish brought horses over to the Americas. Some of these horses escaped and formed large herds that roamed the plains of North America. One such herd is the Pryor Mountain herd, which by some accounts has been in the area for about 200 years.

The social structure of the Pryor Mountain wild horses is that of a harem band. A stallion, or mature male, will have a group of one to three mares and their offspring, of which he is the leader. When a harem becomes too large for a stallion to control, other stallions will try to steal his mares. In fact, for every 10 mares, 4 will change harems annually.

Like the sheep, stallions will often battle for the right to mate. Instead of butting heads, horses will rear up on their hind legs and attack each other with their hooves. These mature, 1200 pound stallions will also chase, kick, and bite at their opponents.

The horses have winter and summer ranges similar to the bighorn sheep. In the summer the majority of the horses are found in the higher ranges of Pryor's due to the high availability of food and water. During the late spring and early summer many of the mares will foal after an 11 month pregnancy. In the winter, most of the horses can be found in the lower elevations where there is less snow and more forage.



Collared ewe in lambing area near Devil Canyon Overlook. NPS Photo



Collared ewe near Hillsboro. NPS Photo

Biologist in the Field By Christy Fleming

Bighorn Canyon has biologists on staff and visiting biologists that study the different animals found in Bighorn Canyon. This is a rewarding job, but also a hard one. To learn about an animal they must observe it. Some elusive animals are captured and fitted with radio collars. Biologists use radio telemetry to track and observe these animals. Some animals are easily found. When biologists find the animal, they sit in one place, sometimes for hours, taking notes on the movement of the animal, social interactions with other animals, or when they defecate. Often biologist will collect fecal samples from animals and can learn if the animal is healthy and what it has been eating. Biologists have recently studied the interspatial relationship between bighorn sheep and wild horses to see if both can survive while sharing their land and resources.

Biologists studying the sheep found that bighorn sheep prefer to live in semi-open areas with rocky terrain that allows many escape routes should a predator attack. They also found that the sheep like to eat grasses and shrubs; noting that most of their year round diet consist of Mountain Mahogany, winterfat, and some juniper. In the observed population, they found that bighorn sheep can live up to 20 years, but the average life expectancy was 10 to 14 years.

In the spring and early summer when the grasses are green, biologist found that a major part of both the horse and sheep diet is grass. Horses eat grass year round but also eat some shrubs like winter fat. Biologists found that although domestic horses have an average life expectancy of about 25 years, due to environmental factors, old age for a Pryor Mountain wild horse is about 16.

Ultimately biologists found that horses and bighorn sheep seem to have different enough diets that they aren't in serious competition with each other. There appears to be enough food and space available to accommodate both species adequately if managed properly.

Bighorn Canyon Habitats, A Biologist for the Day



Science, Language Arts, Art, Speaking and Listening

Standards:	Wyoming Science: Standard 1, Benchmark 1 & 3 Wyoming Language Arts: Standard I, Benchmark B Montana Art: Standard 1, Benchmark 3 Montana Speaking and Listening: Standard 2, Benchmark 1 & 2 Standard 4, Benchmark 3
Duration:	On Site 4 hours, visit a section of the park, do activity Off Site Visit – Watch a video of either horses or sheep and write down behavioral observations.
Class Size:	Any

Objectives

In their study of Bighorn Canyon biology, students will:

1. Identify the habits of horses and sheep.
2. Identify plants that horses and sheep feed on.
3. Describe the habitats of sheep and horses over the course of a year.

Materials

On Site

- Plant identification book to help identify Mountain Mahogany, Winterfat, and Juniper. Photos can also be found on the teacher supplemental disc.
- Notebook and pencil to take notes and do writing assignment
- Sturdy shoes
- Water
- Binoculars

Off Site

- Look at photos on the teacher supplemental disc or search the internet to find photos of Mountain Mahogany, Winterfat, and Juniper .
- Video
- Notebook and pencil to take notes and do writing assignment

Vocabulary

Sexually Dimorphic: is the differences related to the male and female of a species.

Pleistocene: The last ice age, ending about 11,500 years ago.

Ram: is a mature male sheep.

Ewe: is a mature female sheep. (Pronounced “you”)

Lamb: is a baby sheep.

Stallion: is a mature male horse.

Mare: is a mature female horse.

Foal: is a baby horse.

Filly: is a baby female horse.

Colt: is a baby male horse.

Bighorn Canyon Habitats, A Biologist for the Day Cont.



Science, Language Arts, Art, Speaking and Listening

Procedure

On Site

1. Stop at different areas in the park where horses and sheep may be seen.
2. Observe the horses, sheep, or both in their habitat.
3. Take notes as to their actions and interactions; note any “unusual” behaviors.
4. Draw or photograph distinctive markings.
5. Are any of the bighorn sheep collared?

Off Site

1. Discuss the unique features of the horses and the sheep.
2. Watch a movie on horses or sheep.
3. Take notes from the movie as to the animals’ interactions; note any “unusual” behaviors.
4. Draw distinctive markings

Additional Activities

Have a group discussion in class about what you saw. Share your photos, artwork, and field notes with the class.

Who am I?



Science, Language Arts, Art, Speaking and Listening

Standards: Wyoming Science: Standard 1, Benchmark 1 & 3
Wyoming Language Arts: Standard 3, Benchmark 1 through 5
Montana Art: Standard , Benchmark 3
Montana Speaking and Listening: Standard 2, Benchmark 1 & 2
Standard 4, Benchmark 3

Duration: 30 minutes

Class Size: Any

Objectives

In their study of Bighorn Canyon biology, students will be able to identify the animals of Bighorn Canyon by their characteristics.

Materials

- Reference materials
- Examples of animal profiles
- Blank 5" X 8" cards

Setting the Stage

There are several different animals that call Bighorn Canyon home. Some animals stay year round while other migrate through.

Procedure

1. Discuss the diversity Bighorn Canyon's wildlife with the students. This discussion should include the relationships of climate, topography, and vegetation.
2. Each student should select an animal that lives in Bighorn Canyon.
3. Have each student prepare an Animal Profile Card. Instruct students to offer characteristics of the animal in first-person. Read one of the profile card examples.
4. Ask students to draw a picture of the animal on the back of the card or write the name. (For younger students, they could draw what the animal eats, where it sleeps, where it lives, etc. . .)
5. Collect all of the Animal Profile Cards.
6. Break the class into two teams, each with a spokes person.
7. Read the cards aloud to the class. Read a few lines at a time. Stop to let each team guess.
8. While the cards are being read, each team should record the information. When asked each team works together to decide the animal. Flip a coin to see who goes first. Have the students guess the animal described. If they don't get it right, it goes to the next group. If the second group doesn't get it, read more from the card. This will go back and forth until one team gets it correct. That team will receive a point. The team with the most points in the end wins.

Examples of Animal Profile Cards



Student Handout

1. I like dry, warm country in the summer.
2. I have 32 teeth.
3. I don't live in forests.
4. I have a white rump patch.
5. I weigh about 130 pounds.
6. I eat grasses and sagebrush.
7. My young are called fawns.
8. Both males and females have horns.
9. I can run over 45 miles per hour for long distances.
10. I am misnamed for long-horned grazing animals of Africa and Asia.

I am a pronghorn.

1. I like to live in semi-open rocky terrain.
2. I can climb sheer cliffs.
3. I can weigh up to 300 pounds.
4. I use my big curly horns to battle for the right to mate.
5. Both males and females have horns.
6. I eat grasses and shrubs. Mountain Mahogany, winterfat and juniper are some of my favorites.
7. I go to live with other individuals my same age at age three.
8. I have a double cranium.
9. I can live up to 20 years.
10. My ancestors crossed the Bering Land Bridge during the last ice age.

I am a bighorn sheep, ram.

1. In the summer, I like to stay on the Pryor Mountains and in the winter, come down to the lower elevations.
2. I eat mainly grasses, but sometimes I like to eat shrubs.
3. I can weigh up to 1200 pounds.
4. I believe strongly in staying in a group.
5. I will bite and kick other that try to break up my family.
6. I can live to be 16 years old.
7. The BLM manages my population.
8. My ancestors went extinct during the last ice age.
9. The Spanish brought my kind to the Americas in the 1500 and 1600s.
10. I have zebra stripes on my legs and a dorsal stripe down my back.

I am a Pryor Mountain wild horse.