ELK ROCK!

Lesson Plan / Instructor Guide

COURSE TITLE: ELK ROCK!

INSTRUCTIONAL GOAL: Students will learn educational facts in regards to Rocky Mountain Elk in New Mexico along with key biological concepts and definitions and what elk sign looks like.

INSTRUCTIONAL OBJECTIVES: Upon completion of this block of instruction the participant(s) will be able to:

1. Learn basic educational facts in regards to Rocky Mountain Elk in New Mexico.

2. Identify elk sign.

3. Know the four components of habitat.

4. Know the definition of carrying capacity.

5. Know the life cycle of elk in relation to the four seasons of the year.

INSTRUCTIONAL METHODS: PowerPoint lecture.

HANDOUTS: New Mexico Department of Game and Fish, Wildlife Notes: Rocky Mountain Elk. http://www.wildlife.state.nm.us/download/education/conservation/wildlife-notes/mammals/elk.pdf

COURSE DURATION: Lecture & video approximately 30-40 minutes.

CURRICULUM REFERENCES: New Mexico Department of Game and Fish, Wildlife Notes: Rocky Mountain Elk. http://www.wildlife.state.nm.us/download/education/conservation/wildlife-notes/mammals/elk.pdf

SAFETY CONSIDERATION: Know where exits are in building where presentation is given.

EQUIPMENT, PERSONNEL, AND SUPPLIES NEEDED: Laptop or computer (with presentation uploaded), projector or screen, jump drive with presentation or uploaded to computer, power cords (if needed), extension cords (if needed) and speakers.

NOTE: The Department has an elk wildlife trunk that can be checked out and should complement this presentation nicely.

TARGET AUDIENCE: 4th grade and above, and for individuals wanting to learn more about elk and biological terms and concepts associated with elk and their management.

COURSE PREREQUISITES: None.

EVALUATION STRATEGY: No written or oral test.

AUTHOR & ORIGINATION DATE: Storm W. Usrey, April 5, 2020.

REVISION / REVIEW DATE(S): N/A.

REVISED / REVIEWED BY: N/A.

CRITERION TEST: N/A.

CRITERION TEST ANSWERS: N/A.

COURSE OUTLINE:

I. Introduction

A. Give name and Title.

II. Give Goals and Objectives.

III. Cover definitions.

IV. Talk about elk in New Mexico.

A. Extirpation of elk herds.

B. Conservation efforts have brought back elk in New Mexico.

C. Funded mainly by monies from hunters, anglers, trappers and Pitman-Robertson monies.

D. North American Model for Wildlife Conservation has aided (discuss in next slide).

E. Give definition of Conservation again. And talk about elk being a success story in Conservation.

F. Rocky Mountain elk subspecies is what is currently in New Mexico. Talk about other subspecies across North America.

G. Merriam's subspecies information. Once in New Mexico & Arizona, now extinct. Eastern subspecies extinct as well.

V. Talk about parts of North American Model for Wildlife Conservation and this has played role in conserving elk in New Mexico.

VI. Show map of United States and where elk are found. Elk are also found in Canada.

VII. Give some elk facts.

A. They are mammals in deer family Cervidae.

B. Males called bulls, females called cows, young called calves.

C. Antlers not horns. Talk about antlers.

D. Talk about elk in food web (primary consumers, herbivores). What they eat, called grazers.

E. Some herds need to migrate, others don't.

VIII. Show slide of Mule Deer and White-tailed Deer.

IX. Show what elk sign looks like.

A. Tracks.

B. Rubs.

C. Droppings.

D. Shed antlers.

E. Listen for elk sounds such as bugling, mews and barks. Check out YouTube.

X. Talk about the four seasons of the year (spring, summer, fall, winter).

A. Spring – calves born.

B. Summer – calves grow. Bulls in bachelor groups (usually).

C. Fall – Antlers are fully grown. Breeding season.

D. Winter – Breeding done and elk get in herds. Survival mode.

XI. Talk about habitat. Four components are food, water, space and cover.

A. Arrangement of components is important.

B. Mosaic pattern creates edge which is key for many species.

XII. Talk about carrying capacity.

A. Give definition of carrying capacity.

B. Talk about limiting factors on an elk herd.

C. What's the best thing that can be done for an elk herd? Habitat work.

D. Ask questions and discuss:

a. When is an elk herd at its lowest in the seasons? Why?

b. When is an elk herd at its highest in the four seasons? Why?

E. Show slide of diagrams to aid in discussion of carrying capacity.

XIII. Talk about predators of elk in New Mexico and tie in elk in food web.

XIV. Show Department video doing elk mortality study of calves in Gila region.

XV. Thank You!

XVI. Look over reference material.

COURSE CONTENT:

Course Introduction and Overview

Rocky Mountain Elk are a popular game animal in New Mexico and they are a great example of a wildlife species that was once extirpated from the state that is now thriving in various areas across the Land of Enchantment.

The goal for this presentation is to educate students with educational facts in regards to Rocky Mountain Elk in New Mexico along with key biological concepts and definitions and to expand their knowledge on what elk sign looks like.

The objectives of this presentation are as follows:

- Students will learn basic facts in regards to Rocky Mountain Elk in New Mexico.
- Students will be able to identify elk sign.
- Students will learn the four components of habitat.
- Students will learn the definition of carrying capacity.
- Students will learn the life cycle of Rocky Mountain elk in New Mexico in relation to the four seasons of the year.

Body

Definitions

Throughout this presentation there will be key concepts and definitions that will be covered. I feel that it is a good point to have the students read the following definitions off this slide before beginning other slides.

- Carrying Capacity-the amount of a particular species the land can support throughout the year. This can vary every year.
- Conservation-the wise use of our natural resources.
- Extirpated-no more of a species are found in a certain geographical area, but exist in other locations.
- Mammal-warm blooded (endotherm) vertebrate animal that possess hair or fur, females produce milk for young and typically give live birth.
- Preservation-the non-use of our natural resources.

Elk in New Mexico

Some important information to give students in regards to Rocky Mountain Elk in New Mexico:

- Elk herds were extirpated by unregulated market hunting in late 19th century into early 20th century across the state of New Mexico. Conservation efforts starting around 1910 and beyond have brought elk back into New Mexico and elk numbers are at approximately 70,000 animals in the state today. This has been funded mainly by the monies being provided by hunters, anglers and trappers (license sales) and Pitman - Robertson excise tax monies. The North American Model of Wildlife Conservation has played a pivotal role in the success of elk management. What a success story in Conservation! Hunting regulations, reintroductions and habitat work have aided in their success story.

Instructor Notes:
Parts of the North American Model for Wildlife Conservation will be given in the very next slide.

- Currently, Rocky Mountain elk are the subspecies of elk found in New Mexico. There are three other subspecies in North America: Tule, Manitoban and Roosevelt. The Eastern and Merriam's elk subspecies went extinct. The Merriam's subspecies was said to have lived in New Mexico and Arizona before going extinct. The Roosevelt subspecies is the largest subspecies. Today, elk are being reintroduced into their historic range they once roamed east of the Rocky Mountains.

North American Model of Wildlife Conservation

Introduce the parts of the North American Model of Wildlife Conservation to the students:

The North American Model has seven general tenants:

1. Wildlife Resources Are a Public Trust;

2. Markets for Game Are Eliminated;

3. Allocation of Wildlife Is by Law;

4. Wildlife Can Be Killed Only for a Legitimate Purpose;

5. Wildlife Is Considered an International Resource;

6. Science Is the Proper Tool to Discharge Wildlife Policy;

7. Democracy of Hunting Is Standard.

This model is utilized across the United States.

Elk Range in North America

Talk to students about the map of the United States and where elk are currently found. Elk are also found in Canada.

Some elk facts

Elk are mammals meaning they are haired animals possessing a vertebrate, give live birth to young who depend on their mother for milk and are endotherms or warm blooded and self-regulate their internal body temperature. Elk are part of the deer family Cervidae and males are called bulls, females are called cows and young are called calves. Elk that are a year old are called yearlings. During the rut large bulls with cows are called herd bulls, satellite bulls are

smaller bulls with no cows and spikes have a single beam antler with no points. Spikes are very young bulls.

Bulls grow antlers, not horns (antlers are the fastest growing bone). Antlers are shed in late winter and early spring and finish growing by late summer.

Instructor Notes:
Shed antlers are sought after by shed hunters in the spring months because prices for antlers found can reach approximately $17 a pound for brown sheds.

Antlers are protected by “velvet” in summer months and are rubbed off around August when the bull will rub his antlers on trees to get the velvet off. Under the velvet are blood vessels which carry nutrients to the growing antlers.

Instructor Notes:
The picture of the bull on the left side of the slide has velvet-covered antlers.

Elk are primary consumers and are herbivores, meaning they eat vegetation. Elk are ruminants and have a four chambered stomach. Elk are primarily grazers and they eat grass, but they can browse on leaves, brush, aspen bark, etc. especially in winter months. Some elk herds migrate in New Mexico while some do not need to because the area they live in may not get deep snow.

Other members of Cervidae in New Mexico

There is a slide showing pictures of a mule deer and a white-tailed deer. Both of these are in the deer family Cervidae which includes elk. There is also a smaller white-tailed deer in the southwest part of the state called Coues deer. They are also part of the same family.

Elk Sign (Six slides counting the Elk Sounds slide)

Elk leave various sign that they are in an area. When you are out on your next adventure in the great outdoors look for elk tracks (they are an even-toed hooved animal), rubs (bark rubbed off trees), droppings (pelleted and sometimes clumped) and shed antlers. Elk droppings that are clumped together will usually be present in summer months when they are eating on lush green grass and have more water in their system. Elk will also leave sign in an area they are using and you can look at grass to see if it has been grazed on, look for tracks at water sources and in the fall they will take mud bathes in “wallows”.

When you are out and about, listen for elk sounds which can include bugles, mews and barks. Bulls bugle (aggressive-type call primarily in fall when rut is taking place, feeling of “excitement” during other times of year). Amount of light hitting the retina of an elk’s eye will trigger hormones and timing of the rut or breeding season. Cows, calves and spikes can mew (locator, contentment, excitement). Cows and bulls both bark (this is an alarm call).

Instructor Notes:
You can find examples of elk calling or making sounds on YouTube.

What are the four seasons of the year?

You can ask your students if they know what the four seasons of year are. And if they know what elk are doing during these seasons.

Four Seasons

The four seasons of the year are winter, spring, summer and fall. Elk are doing the following during the seasons of the year:

- Spring = Calves are born.
- Summer = Calves get bigger and eventually no longer need mother.
- Fall = Rut begins and bulls will join and form herds of cows. Hunting seasons are at this time. Hunting is a management tool and generates money for wildlife management.
- Winter = Bulls generally head to rough and rugged country and cows form larger herds. Can be a time of highest mortality as there are fewer resources on landscape. Larger bulls will form bachelor groups.

What components make up habitat?

There are four components that make up habitat. See if the students can name them?

The four components are…

The four components of habitat are food, space, water and cover. And the arrangement of all is important. You can't have water miles away from the three other sources (for an example). All parts need to be relatively close together. Again, elk are herbivores and depend on finding grass, and sometimes browse, required as a food source. Elk must have water (daily) and need to have streams, ponds, springs, wildlife guzzlers (man-made) and windmills (man-made) in order to drink (these are just a few examples). Elk need space away from humans in order to do well. You cannot find elk in downtown Albuquerque, but you can find elk away from buildings and congregated homes on Mt. Taylor. Lastly, elk need cover in order to hide from predators and to get away from weather. Cover can be something as small as sage brush or as big as trees and changes in the topography such as gullies and canyons.

Show the arrangement and mosaic pictures in the next slide. Show how food, water, space and cover are fairly close together. Also, show the mosaic pattern picture which shows the habitat does not all look the same and there is a lot of diversity of plants and animals that can be found when there is more heterogeneity and lots of edges along the tree lines. When someone selectively harvests timber creating some openings, but leaving some areas for bedding and cover for all wildlife this is the best. Important grasses and forage can grow in the openings and sunlight is not "choked out" of the fields from reaching the growing shorter plants.

Carrying Capacity

Carrying Capacity is the amount of a particular species the land can support throughout the year. This can vary every year because the amount of resources will vary year to year. Limiting factors on an elk population can be predators, habitat loss, disease and hunting (to name a few). Limiting factors decrease numbers in a population.

The best thing a wildlife biologist can do to increase the amount of elk in an area would be to improve the habitat which includes: food, water, space and cover.

When do you think an elk herd is at its lowest of the four seasons? And when do you think it is at its highest? Explain why? See what the students come up with. Elk numbers are at their lowest in the winter months and when coming out of winter. This can be due to disease, fewer resources on the landscape and hunting seasons. Elk numbers will be at their highest in the summer months after calves are born. Calves are born around the last weeks of May and the first two weeks of June.

Instructor Notes:
Tell students to never pick up baby animals in the wild because most of the time the mother is a short distance away and will return. Don't assume they are orphaned.

Diagrams of Concepts

The two diagrams are great visual tools to aid in your discussion. The diagram on the left shows how a container serves as the "carrying capacity" of a wildlife population and when it is filled up with water and is full it is at carrying capacity. Limiting factors can cause the population to decline, but when young are born the population will increase.

The diagram on the right shows how population sizes fluctuate with the seasons of the year.

Predators of elk

Elk have several predators in the Land of Enchantment and this can include coyotes, bears, cougars and Mexican gray wolves. Humans hunt elk to put food on their tables and to keep herd numbers in check.

NMDGF Video

The students can watch the attached video which shows biologists and Conservation Officers in the field capturing calves and placing a tracking ear tag on the young. Measurements were also taken on the calves. This will aid biologists in researching specific predator impacts on the elk herd in a given area. If the calf dies, the ear tag will give a mortality signal and biologists can come in and perform a necropsy and document the evidence to determine a likely predator that killed the calf or other cause of death. This research in the video was being conducted in the Gila Region.

Conclusion

Thank the students for paying attention! They now know more about elk in New Mexico than before the presentation started.