Wildlife Management 101

Lesson Plan / Instructor Guide

COURSE TITLE: Wildlife Management 101

INSTRUCTIONAL GOAL: Students will learn basic educational facts in regards to wildlife management in New Mexico.

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

1. Learn basic educational facts in regards to Wildlife Management.
2. Know the definitions of carrying capacity, conservation & preservation.
3. Know the four components of habitat.
4. Be able to identify some of the larger mammals in New Mexico.

INSTRUCTIONAL METHODS: Power point lecture.

HANDOUTS: None.

COURSE DURATION: Lecture and video approximately 45-55 minutes.

CURRICULUM REFERENCES: None.

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.

TARGET AUDIENCE: 4th grade and above and for individuals wanting to learn more about wildlife management.

COURSE PREREQUISITES: None.

EVALUATION STRATEGY: No written or oral test.

AUTHOR & ORIGINATION DATE: Storm W. Usrey, November 30, 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 important background information.

III. Cover definitions.

IV. Find out if the students know what the four main components are of habitat (food, water, space and cover).

A. Manage habitat is best.

B. Arrangement of components is important.

V. Carrying capacity diagram.

VI. Limiting factors diagram.

VII. Talk again about how improving habitat can benefit wildlife.

A. Putting in water sources or catchments.

B. Thinning trees.

C. Controlled burns.

D. Possibly limiting human activity certain times of the year.

VIII. Pictures of New Mexico Dept. of Game and Fish in action.

IX. There are success stories across North America of wildlife species.

A. Wild turkeys.

B. Elk.

C. American bald eagles.

X. North American Model of Wildlife Conservation.

XI. Regulated hunting is positive.

A. Talk about the Kaibab deer population.

B. Hunting provides monies.

C. Hunting provides meat for families.

D. Hunting helps to keep wildlife populations in check.

E. Hunting allows families a way to connect in nature in a positive way.

XII. Now let's view some of our larger mammals we have in our state.

A. Mule deer
B. White-tailed deer
C. Rocky Mountain elk
D. Pronghorn antelope
E. Black bear
F. Cougar
G. Oryx
H. Ibex
I. Barbary sheep
J. Bighorn sheep (Desert and Rocky Mountain)
K. Coyote
L. Mexican gray wolf
M. Javelina
N. Bobcat

XIII. Thank You!

COURSE CONTENT:

Course Introduction and Overview

Wildlife in New Mexico belong to the citizens and New Mexico Department of Game and Fish manages wildlife for the citizens. Funding mainly comes from hunting, fishing and trapping license sales and we will talk more about this as we progress with this presentation.

Body

Definitions

Throughout this presentation there will be key concepts and definitions that will be covered. 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 very every year.
- Conservation-the wise use of our natural resources.
- Endangered-a wildlife or plant species that is seriously at risk of becoming extinct.
- Extinct-no longer in existence.
- Extirpated-no more species are found in a geographical area, but exist in other locations.
- Habitat-the natural environment of an animal, plant or other organism.
- Limiting factors-a variable that prevents the population from growing or causes a decline. Limiting factors can be disease, weather, predation, loss of habitat component (to name a few).
- Preservation-the non-use of our natural resources.
- Threatened-species of wildlife or plants that are vulnerable to endangerment.

Habitat and the four components

At this time, I feel it is important to quiz the students as you begin this section and see if they can name the four components of habitat (food, water, space and cover). Tell the kids to think what they need to survive and generate some thinking and possible discussion.

> Instructor notes: You may get some students saying that they need their home which would be considered cover. Space will likely be one that will not pertain or come up, but have them think of shopping centers being places in pristine areas of forest or desert that is void of human habitation and how this could impact wildlife.

- Let the students know that the best thing a wildlife biologist or manager can do is to manage the four components of habitat to benefit wildlife. If water is void, adding it can increase use of an area which benefits wildlife and how they utilize the landscape.
- Arrangement of the habitat is key as well. If water or even a food source is miles away from where wildlife are living they will have to move in order to obtain their needs. Having food, water, space and cover in relatively close distance is key for wildlife.

Diagram of carrying capacity

Go over the diagram of carrying capacity with the students. Make sure they understand the definition and talk about how the population fluctuates throughout the four seasons. This may be caused by limited resources such as food and water (winter months) or go up during time of birth (late spring and early summer months). The carrying capacity is the average over all four seasons and it can fluctuate from year to year. The carrying capacity of an area or region for a wildlife species can be the toughest answer a biologist may try to obtain in their career and coming up with a range of numbers for a species is more realistic.

Diagram for limiting factors

Go over diagram of limiting factors and let students know that certain processes or incidents can cause a population to decline over the course of a year. These events can include, and are not limited to, disease, predation, starvation, old age, loss of habitat, accidents and weather. Then when species begin to give birth again the population goes back up and the cycles begins anew.

To help wildlife manage the habitat

To help increase wildlife numbers or to help them the best we can means managing the habitat or the food, water, space and cover. Biologists can add water sources, thin trees and have controlled burns to diversify the food sources available for wildlife. Thinning, not clear cutting, allows sunlight to reach through the tree canopy to assist with plants growing and controlled burns adds nutrients back into the soil. Some seeds need fire in order to grow. These two processes can diversify the plant life in the area.

Limiting human activity in certain areas, especially during the birthing season, can benefit certain species and some agencies may need to do this in areas from time to time.

Department of Game and Fish does surveys and assists with habitat projects

Pictures are included in the presentation to show how much fun the job is with New Mexico Department of Game and Fish and to show that surveys and habitat projects are important.

Success Stories across North America

The population of wild turkeys were as low as approximately 30,000 birds to now over 7 million. They have rebounded because of habitat management, relocation efforts, laws and regulations and research. The National Wild Turkey Federation (NWTF) has played a key role in their success along with state agencies and volunteers. Wild turkeys are a game species in New Mexico.

Elk once numbered approximately 10,000 to over 1 million today. Habitat management, relocation efforts, laws and regulations and research are key too. Rocky Mountain Elk Foundation (RMEF), state agencies and volunteers have been key. Rocky Mountain elk are a game species in New Mexico.

American bald eagles went from 400 nesting pairs to approximately 9,000. Research and laws helped the recovery of our national bird. Bald eagles are not a game bird and are federally protected.

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. The North American Model of Wildlife Conservation has been key. Many states wildlife management programs are funded directly from monies that are collected through license sales and the Pittman-Robertson monies (excise tax on sporting equipment and gear). In New Mexico wildlife belong to all citizens, but those who hunt, fish or trap (approximately six percent of population) are directly paying for wildlife management.

Regulated hunting not market hunting

Talk to students about how regulated hunting is positive. Market hunting decimated many wildlife populations in late 1800s into early 1900s, but today with hunting seasons, hunting regulations, bag limits, laws and research many wildlife populations have rebounded. Regulated hunting is positive for the following:

- Talk about the Kaibab deer population in late 1800s into early 1900s and how unregulated hunting, overgrazing by domestic livestock had impacted the deer herd in a negative way and caused it to decline. Grazing by domestic livestock was limited, the area was closed to hunting and bounties put on predators allow the deer to rebound, but too many deer on the landscape overused the resources available to them. They ate themselves out of house and home! A hard winter and starvation caused thousands of deer to starve to death. People realized that hunting was needed as a tool to control deer numbers, predators were needed on landscape but still need to be managed too.

- Hunting provides monies to be used by the states through Pittman-Robertson monies. An excise tax put on hunting gear and equipment is incumbered by the federal government and distributed to the states for wildlife management.

- Hunting gives families an opportunity to put healthy lean protein on their tables to feed their families. Wild game meat is very healthy and will not contain steroids.

- Hunting helps to keep wildlife populations in check and the Kaibab deer study was an example of this.

- Hunting allows families a way to connect in nature in a positive way.

Let's view some of our large mammals of New Mexico

- Mule deer - have a black horseshoe patch on their forehead, have a small rope like tail with a black tip, perform stotting (jumping) versus running when spooked and generally have two main beams on their antlers with points that come off the two main beams. Their winter coat will typically give them a gray coloration in the winter months and they will be more orange in color with their summer coat. Mule deer can be found in a variety of habitat types. Males are called bucks, females are called does and young are called fawns. Mule deer are primarily a browser meaning they eat brush and flowering plants.

- White-tailed deer - typically have one main beam with points that come on their antlers. They are browner in coloration during the winter months than mule deer. They will run versus stotting or jumping when spooked. They will also lift their tail and expose the white underside as a way of warning other deer of danger and this is how they got their name. White-tailed deer are typically more vocal than mule deer. We have two breeds of white-tailed deer in New Mexico. We have Coues (pronounced cows) deer that are found in the southwestern part of the state and we also have eastern or Texas white-tailed deer in parts of the eastern side of the state. These deer are very spotty in our state. Males are called bucks, females are called does and young are called fawns. White-tailed deer are primarily a browser meaning they eat brush and flowering plants.

- Rocky mountain elk - are found in our more mountainous areas of the state and bulls (or males) grow impressive antlers used in intraspecies competition during the rut or breeding season. Antlers are shed around February-April and another set grows in. While the antlers are growing they are covered in velvet until they are fully grown and then bulls rub the velvet off on trees and brush. Females are called cows and young are called calves. Peak calving season happens in June. Elk are very vocal and tend to hand out in herds during most of the year. Bulls will prefer to hang in bachelor groups, or alone, except during the rut which occurs in the months of September and October. Elk are primarily a grazer meaning they eat grass.

- Pronghorn antelope - are classified in their own family and are the fastest land mammal in North America. Males are called bucks, females are called does and young are called

fawns. Peak fawning season happens in the month of June. Pronghorn are primarily a browser meaning they eat flowering plants and brush. Bucks will have a black check patch and both species can grow horns. Most females, or does, that grow horns have very small ones. Does will not have the black check patch. Pronghorn are the only species which lose their horn sheath and they will lose this once a year around the month of November and another one will grow in behind it. They are a game animal.

- Black bear - are omnivores and will eat a variety of food with most of their diet consisting of mast, green grass and insects. They will hunt and eat dead animals they come across. Males are called boars, females are called sows and young are called cubs. Black bear come in a variety of colors that range in black, brown, cinnamon, blonde and red. Black bear are the only existing bear species in New Mexico and the last grizzly bear was killed in the state around, or in, the 1930s. Cubs will generally stay with their mom for two years before leaving her. Black bears will go into a hibernation state called estivation and on warmer days they may venture from their dens a short distance. They can run fast over short distances and are excellent climbers. They are a game animal.

- Cougar - are found throughout New Mexico and generally have large territories they will defend against other cougars specifically when same sexes meet. Males are called toms, females are called queens and young are called kittens. Kittens will stay with their mom for approximately 1 ½ years before leaving to find their own territory. Cougars, or mountain lions, are carnivores and only eat meat. They are efficient hunters and can kill a deer or elk about every 7-10 days. They are a game animal in New Mexico.

- Oryx - are non-native and were introduced to White Sands Missile Range in the 1960s. Oryx are an antelope species that originated from the continent of Africa. They are a game animal in New Mexico and you can hunt them. Males, bulls, and females, cows, both grow horns. Mature females will typically have longer horns than males, but males will have thicker horns with more prominent rings. Horns on bulls are thicker than females too. Oryx will drink at water sources and their large stomach will allow them to drink more than most other wildlife species. They can also metabolize water from their food sources too. There is no set breeding season for oryx.

- Ibex - are non-native to New Mexico and were introduced to the Florida Mountain Range, south of Deming, in the rugged Florida (pronounced Floor-eda) Mountains. They are very sure footed and their feet allow them to grip the steep rocks. At night ibex will sleep on top of the many domes that are found around the mountain range to avoid predators such as cougars. Males are called billies, females are called nannies and young are called kids. Males will grow impressive horns with a sharp curl. Females will grow horns too, but they are much smaller that the males. Ibex are classified as browsers. They are a game animal in New Mexico.

- Barbary sheep - are non-native to New Mexico and were introduced into the state in the 1960s. Barbary sheep are found in areas around the state, but primarily around the Hondo Valley area and the Guadalupe Mountains near Carlsbad. Males are called rams, females are called ewes and young are called lambs. Both males and females grow horns, but

males grow much larger horns. Barbary sheep are classified as browsers. They are a game animal in New Mexico.

- Bighorn sheep (Desert and Rocky Mountain) - are such a success story in New Mexico and they can be found in various mountain ranges around the state. We have both desert and Rocky Mountain subspecies. Males are called rams, females are called ewes and young are called lambs. Rams will grow impressive curled horns that they use to fight each other for the breeding rights of ewes. Bighorn sheep are browsers. Bighorn sheep are a game animal in the state of New Mexico.

- Coyote - can be found through out the state and they are not a protected animal. They tend to live in packs and the breeding season will usually occur in the month of February. Coyotes are omnivores and they will eat insects, vegetation, nuts, berries, grasses and meat.

- Mexican gray wolf - they are primarily found in the Gila region of New Mexico, but have been seen in neighboring areas of the Cibola National Forest. Mexican gray wolves are a federally protected species. They are an efficient hunter and will take down deer and elk along with smaller mammals. They are a pack animal as well. Wolves were extirpated from New Mexico and were reintroduced into the state. At a distance, wolves can look similar to coyotes. Adult wolves will have blocky heads, are two to three times heavier than coyotes, have more rounded ears and have bigger feet/tracks. Many wolves will have radio collars on their necks, but some will not.

- Javelina - are classified in their own family (similar to pronghorn antelope). Even though they look similar to pigs they are not closely related. Javelina are primarily found in the extreme southern portion of the state, but have been sighted south of Belen and between San Rafael to Ramah off of Highway 53. These are some of the more northern sightings in their normal range here in New Mexico. Javelina are known to eat on succulent cactus plants and tubers and roots, and find areas that may have acorns. They will occasionally eat lizards and feed on dead birds and animals so they are classified as an omnivore. They are a game animal in New Mexico.

- Bobcat - bobcats are carnivores and have short tails. Spotting can be seen on their fur and they may closely resemble lynx. The difference between bobcats and lynx are the following: lynx have a tuft of black hair on the tips of their ears, all black tip on their tail where bobcat will have white around the black tip of their tail, lynx have minimal spotting as compared to bobcats and lynx will generally have longer legs and bigger feet. If lynx are found in New Mexico it would be the extreme north part of the state near the Colorado border. Bobcat will mate in the months of February and March. Males are called toms, females are called queens and young are called kittens. Bobcats are a game animal in New Mexico.

Conclusion

Thank the students for paying attention! They now know more about wildlife management.