



Ice Cream Plants & Skull Observation

Name: IRRC	Time Required: 30-60minutes (depending on class discussion and observation time)
Subject: Science	Grade Level: 3 rd -8th

Overview	Students will learn about the different kinds of grazing management systems, renewable resources and how livestock and wildlife can co-graze on rangelands. They will look at herbivore and carnivore skulls to determine why animals eat what they eat.
Goal(s) & Objective(s)	Students will be able to explain why grazing management is important. Students will be able to explain the difference in different grazing management systems.
Materials	<p>Materials:</p> <ol style="list-style-type: none"> 1. At least 3 different flavors of wrapped candy 2. Paper 3. Pencils 4. Questions 5. Animal Skulls
Teaching Activities: <i>Instructional Approaches/Strategies</i>	<p>Introduction:</p> <ol style="list-style-type: none"> 1. Ask the students the following questions: Who likes Ice Cream? What kinds of ice cream do you like? Are there flavors that you don't like? Tell them that animals are the same way. Cows will eat plants that deer won't and that's why they can coexist on the range. They eat different plants, so they don't always compete. <p>Procedures</p> <p>Part 1 Grazing</p> <ol style="list-style-type: none"> 1. Tell the students that they are not to eat the candy; they are going to do an activity first. 2. Hand each student at least 3 pieces of candy (1 from each flavor) 3. Have the students split them into 2 different groups. Group 1- their favorite flavor. And Group 2- the candies that they like the least. 4. Tell students that the plants that the animals like are what we are going to call ice cream plants- because it is their favorite. These plants are - the tastiest for some animals just like ice cream is tasty to us. Tell them that the plants they don't like as much are going to be called celery plants.

5. Explain to students that land managers use different grazing management systems so that the ice cream plants will have time to grow back and reseed so that there will be more ice cream plants. Demo that if you eat all the ice cream plants and don't use grazing management systems then the ice cream plants can't grow back so all the celery plants may keep growing and take over.
6. Ask them how they think this is bad for the environment.
7. Go over grazing systems with students. (See attached handout) Explain that the different types of grazing systems are for the benefit of the environment.
8. Review vocabulary with students.

Part 2- Wildlife & Livestock Cohabitation

1. Ask students the following questions:
2. What is a renewable resource?
3. Are rangeland plants a renewable resource?
4. Review what each of the following are:
 - Forb- flowers
 - Grass
 - Shrub-woody plants ie: bushes

Cattle- grass

Wild horses- less grass and more shrubs and forbs

Deer- forbs and shrubs

Sheep- (domestic & wild) shrubs in the winter, forbs and grasses in the summer.

Animal Skull Discovery:

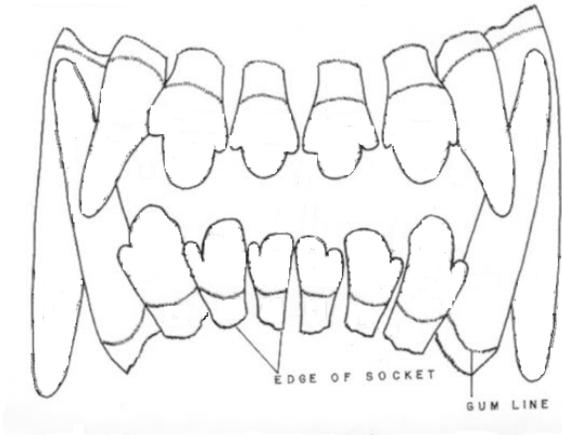
5. Discuss how sheep graze. Show them the skull- Note that sheep teeth influence what they eat.
6. The split lip allows sheep to pick the preferred leaves off of the plant.
7. The bottom front incisors are sharp like knives, and the back teeth grind the plants.
8. Cattle have similar teeth to sheep, but more and now split lip. How does that affect what they eat? (Cattle chew their cud several times, their front teeth cut the vegetation and their back teeth grind it several times.
9. Ask: What are prey and predators?
 - The next skull is a predator. Have students compare the skulls. What are similar what are different?

Tell students that when you are discussing predator vs. prey you are specifically talking about carnivores as the predator and an herbivore as the prey. Explain that carnivores can eat herbivores as well, which would make one the predator and one the prey. However, for today's lesson, that is not the case. Then propose the following questions:

	<ul style="list-style-type: none"> • Why do predators have sharp teeth? • Why does the coyote have more teeth than the sheep? • How does the shape of the animals teeth affect the type of food it eats? <p>9. Also have students notice the shape of each animal’s head, eye placement and head size. How do these characteristics affect what they eat?</p> <p>Optional: show attached skull picture handout with teeth facts.</p> <p>Closure</p> <ul style="list-style-type: none"> • Discuss with students the importance of both predator and prey in the environment. Without both, the ecosystem would be unbalanced.
Assessment:	<p>Assess the student’s knowledge by reviewing the worksheets and class discussion.</p> <p>Optional: Have students draw a picture of either predator or prey. They need to include 3 characteristics that make it clear whether the picture is of prey or predators.</p> <p>Have them write at the bottom, what the animal is and what it eats. Also have them justify why their animal is a predator or a prey.</p>

Vocabulary: Grazing, Management/manager, Rangeland, Deferred Rotation Grazing, Rest-Rotation Grazing, Continuous Grazing, Controlled Grazing, Seasonal Grazing, Renewable Resources

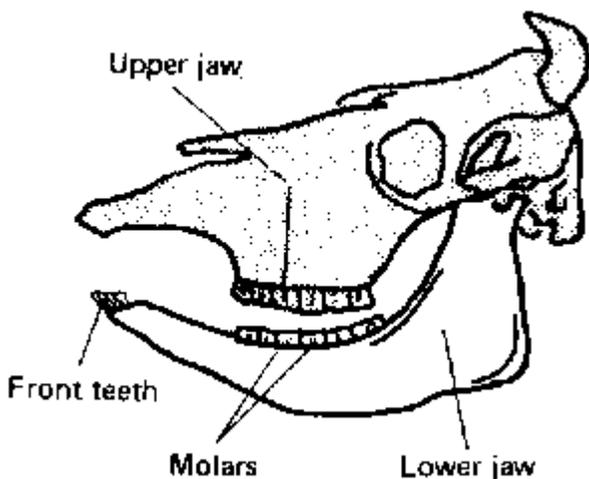
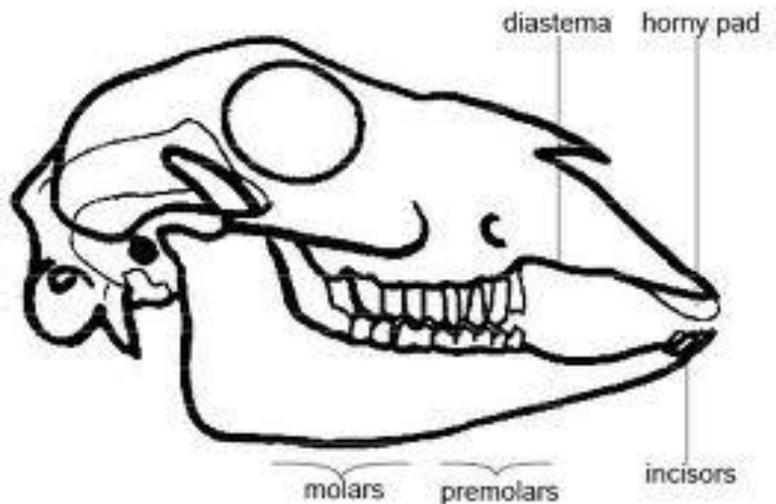
Teeth: They affect what I eat!



Coyotes have 42 teeth including 4 big incisors
Their teeth are sharp and perfect for grabbing and holding prey.

Sheep have:

- 20 Temporary teeth
- 32 Permanent teeth at maturity
- 4 pairs of incisor teeth on lower jaw
- No incisors on top jaw, instead they have a cartilaginous (hard) dental pad on upper jaw
- Split upper lip with mobile lip



Cattle have a total of 32 teeth.

- 8 incisors on the bottom front,
- a hard dental pad on the top front (no teeth)
- 6 strong molars on the top and a bottom of each side to grind food.

Ice Cream Plant Handout

Controlled vs. continuous

The two major types of grazing management are controlled and continuous. With continuous grazing, the animals get to eat whatever they want, whenever they want to (ice cream every day - until it's gone!). With controlled grazing, the manager moves animals between different pastures. All grazing systems use a type of controlled grazing.

Rest Rotation

Rest rotation grazing divides the rangeland into at least four pastures. One pasture remains rested one whole year and grazing animals are rotated in the other three. This grazing system can be good when the pastures have sensitive plants that require time for rest and re-growth.

Deferred Rotation

In a deferred rotation system, managers move animals between pastures all in the same year. At least one pasture gets to grow until it goes to seed. Plants can also grow back during the part of the year when they are not being grazed.

Seasonal

Seasonal grazing means that managers pay attention to the season to choose when to graze an area. This means that the areas that are not being grazed get to rest and the plants have a chance to grow back.

Ice Cream Plant Questions:

What is a disadvantage of continuous grazing?

What is a benefit of all of the grazing systems?

Do you think one grazing system is better than another? If so which one & why? If not, explain why not.

Questions from class activity

Why did we call the "favorite" plants called ice cream plants and the other plants celery plants?

How can land managers keep animals from eating "ice cream" plants all the time?