



Lesson Five: Tested Teamwork

Grade Level: 5th Grade

Time: 60 minutes

Essential Question: How can we be stewards of Wyoming's agriculture to benefit current and future generations?

Objective: Students will use examples from a working Wyoming ranch to draw connections between the needs of a variety of species in an ecosystem and how those needs can be met.

Purpose: Students learn that a healthy ecosystem is one in which multiple species are each able to meet their needs in a relatively stable web of life. Students learn that multiple species can have their needs met in the same ecosystem and that humans play a role in managing species within an ecosystem.

Required Materials/Resources:

- Video:
<https://www.youtube.com/watch?v=rdaJ8oYnCAw&list=PL2755E6C0DEBBF66B&index=84> *A Bad Rap for Sheep*
(Source 1) *Video length: 1 minute 41 seconds*
- Video Notes page to use for Prairie Monarch Bison video (one copy per student and one to post)
- Video: <http://www.farmmeetsfunction.com/prairie-monarch-bison.html> *Prairie Monarch Bison Ranch* (Source 2) *Video length: 8 minutes 50 seconds*
- 6 sheets of chart paper for the graffiti wall activity (see steps 5 and 6)
- Scenario 3 card (one per student) - (Sources 3, 4)

- Student Recording Sheet - Scenario 3 (one per student)

Suggested Teacher Preparation:

- Preview the videos, and make sure that they will play for your class.
- Prep and hang chart paper for the graffiti wall activity. Write one statement from the Video Notes page on each piece of chart paper.
- Have T-chart from lesson four available to review.

Standards:

Science: 5-LS2-1 (CCC, DCI) - (Explicit), 5-ESS3-1, 3-5-ETS1-2 (DCI, SEP) - (Practiced/Encountered)

ELA: 5.RI.6, 5.W.8 (Practiced/Encountered)

Vocabulary:

- **Bloat** - digestive problem of ruminant animals (especially cattle) marked by accumulation of gas in one or more stomach compartments
- **Ruminant** - animal's stomach has four components or chambers, able to digest plant material

Instructional Procedure/Steps:

1. Remind students that in the previous lesson, they spent time learning about the needs of plants and animals and their relationships to one another. Briefly review the needs of plants and animals by referencing the T-chart the class created in Lesson 4.
2. Say: **“Today, we are going to be expanding our thinking about the needs of organisms in an agricultural ecosystem. We’re going to start by watching a video about two organisms in an agricultural ecosystem. It is called ‘A Bad Rap for Sheep.’ Listen for information about both the needs of cattle and of sheep.”** Show the video.
<https://www.youtube.com/watch?v=rdaJ8oYnCAw&list=PL2755E6C0DEBBF66B&index=84>. The video is short, however, contains much information. You may want to

show the video more than once. Students will do a close viewing of the video. Also, students might need to have the term “bad rap” explained to them.

3.  Before showing the video a second time, say: **“We will be discussing the following question when the video finishes, so pay careful attention to the answer to the question as it is mentioned in the video.** (You may wish to post the question.) **One common way of thinking is that sheep and cattle can’t both meet their needs in the same ecosystem because they both need to graze and are competing for the same resources. That competition might lead to one type of animal not having enough food or to overgrazing, which is bad for the land. What information does the video give to refute that claim?”** *Sheep and cattle can eat different plants or different parts of the plant, sheeps’ mouths allow them to eat parts of the plant closer to the ground, grazing both sheep and cattle together can utilize 20% more forage than either species would get if they were grazing separately.*
4. After watching the video, have students do a think-pair-share and discuss the information that refutes the claim that two species needs cannot be met in the same ecosystem. Bring students back together to share and be sure to emphasize that this video showed a relationship in which multiple animal species can live in the same ecosystem because their needs are being met.
5. Say: **“We are now going to watch a different video. It is about the Prairie Monarch Bison Ranch, and it also explores the idea of multiple species in an ecosystem. This time, you will take notes to provide evidence for an activity after we watch the video.”** Pass out the Video Notes page, and go over the statements so students know what evidence to look for:



In this task, students will be engaged in the higher order thinking skill of evaluation.



In this task, students will be engaged in the higher order thinking skill of synthesis.

TEACHER NOTE: Up to this point in the scenarios, students have been presented with options that imply that an agricultural steward would weigh their options and then select ONE of them. In reality, farmers and ranchers often use a combination of management techniques. If any students independently suggest the idea of multiple strategies when analyzing the options for this scenario, this would be a good point for a discussion about that concept.

- Multiple animal species can survive in the same ecosystem as long as their needs are being met.
- Multiple plant species can survive in the same ecosystem as long as their needs are being met.
- Multiple plant and animal species can survive in the same ecosystem as long as their needs are being met.
- Humans play a role in managing plant species within an ecosystem.
- Humans play a role in managing animal species within an ecosystem.
- Humans play a role in managing how plant and animal species interact in an ecosystem.

Play the video and stop it at the 8:00 minute mark.

<http://www.farmmeetsfunction.com/prairie-monarch-bison.html>

6. When finished watching the video, students will complete the graffiti wall activity. Already have hung the prepped chart papers around the room. Give students 10 minutes to write on the charts a piece of evidence they saw during the video that supports each statement. Encourage students to add things that aren't already there if possible. There will probably be some duplicates.
7.  Gather students back together and discuss some of the evidence that was written on the chart papers. For each statement, ask: **“How does this specific piece of evidence support the science idea? Why does this evidence belong here? Could it belong on more than one paper? Why or why not?”**
8. When the discussion is finished, say: **“You’ve just looked at evidence of two very important ideas about ecosystems: Multiple species can survive in the same**

ecosystem when their needs are met, and humans play a role in managing species within an ecosystem. You are now going to read your scenario for this lesson and apply these ideas in order to make a stewardship decision.”

9. Pass out Scenario 3 and the Student Recording Sheet. Follow the protocol used in previous lessons. After students are finished, review their responses and award points for today’s work based on the following:

Scenario 3 - Multiple Planting Alfalfa and Grass

- **1 point** - Student accurately responds to: **How does your choice change the ecosystem described in the scenario?** They may earn a point for either a positive or negative change.
- **1 point** - Student accurately responds to: **How does your choice support both plants in meeting their needs?**
- **1 point** - Student accurately responds to: **How does it show good stewardship of the agricultural resources?**
- Even though students are asked only to pick ONE option, award **a bonus point** for any student who suggests the idea of using more than one of the techniques.

Assessment: See step 9.

Credits/Sources:

1. University of Wyoming Extension. (2011, July 18). *A Bad Rap for Sheep*. Retrieved August 24, 2017, from <https://www.youtube.com/watch?v=rdaj8oYnCAw&list=PL2755E6C0DEBBF66B&index=84>
2. Farm Meets Function. (n.d.) *Prairie Monarch Bison Ranch*. Retrieved August 24, 2017, from <http://www.farmmeetsfunction.com/prairie-monarch-bison.html>
3. Islam, Anowar. Norton, Jay. University of Wyoming. (2009, February 5). *Interseeding Legumes in Hay and Pasture*. Retrieved August 26, 2017, from http://www.uwyo.edu/soilfert/pubs/interseeding_legumes_islamnorton1_5feb2009.pdf
4. McKenzie PhD, Ross H. Top Crop Manager. (2015, November 2). *Pros and cons of using chem fertilizers*. Retrieved August 26, 2017, from <https://www.topcropmanager.com/fertility-nutrients/pros-and-cons-of-using-chem-fertilizers-18067>