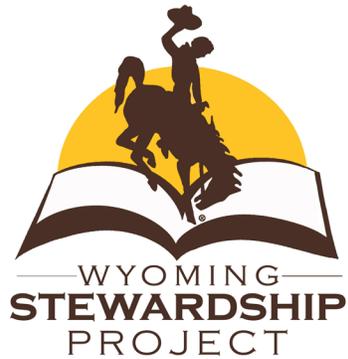




— WYOMING —
STEWARDSHIP
PROJECT

3rd Grade

**Outdoor Recreation & Tourism
Unit**



3rd Grade Outdoor Recreation & Tourism

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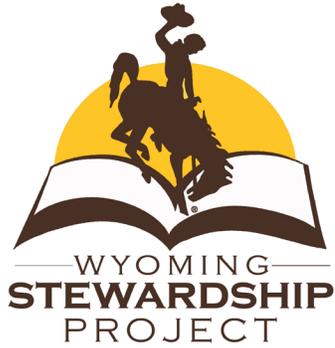
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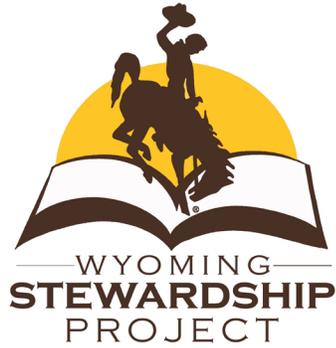
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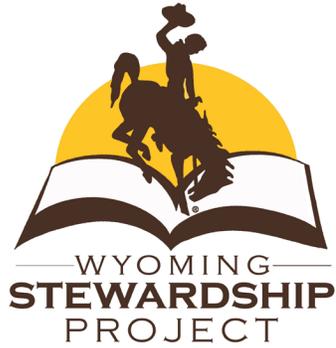
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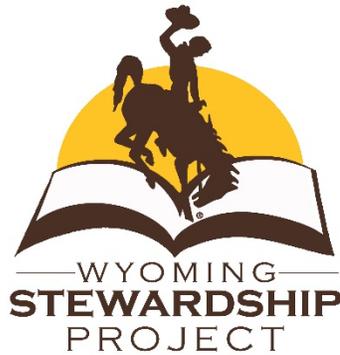
3rd Grade Outdoor Recreation & Tourism Standards

Day	Lesson Title	ELA		Math	
		Explicitly Taught	Practiced/ Encountered	Explicitly Taught	Practiced/ Encountered
1	Lesson 1: Wyoming's Unique Public Land		3.RI.1,3.RI.7, 3.SL.1		
2	Lesson 2: Using and Caring for Wyoming's Public Land	3.RI.1, 3.SL.3	3.RI.7, 3.W.7, 3.W.8, 3.SL.1, 3.SL.4		
3	Lesson 3: Wyoming Wildlife		3.SL.1		
4	Lesson 4: Relationships of Humans, Plants, and Animals in Wyoming		3.SL.1, 3.SL.4		
5, 6	Lesson 5: Careers Demonstrating Stewardship		3.RI.1, 3.RI.7, 3.W.7, 3.SL.1, 3.SL.4		
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3rd Grade Outdoor Recreation & Tourism Standards

Day	Lesson Title	CVE		Health	
		Explicitly Taught	Practiced/ Encountered	Explicitly Taught	Practiced/ Encountered
1	Lesson 1: Wyoming's Unique Public Land				
2	Lesson 2: Using and Caring for Wyoming's Public Land		CV5.2.2, CV5.4.1		
3	Lesson 3: Wyoming Wildlife				
4	Lesson 4: Relationships of Humans, Plants, and Animals in Wyoming				
5, 6	Lesson 5: Careers Demonstrating Stewardship	CV5.1.1, CV5.3.1	CV5.2.2, CV5.4.1		
7-9	Lesson 6: Engineering Solutions to Real-World Problems	CV5.2.2, CV5.3.1			



Dear Educator,

I am honored to introduce you to the Wyoming Stewardship Project. I want you to know, this unit was written with you and your students in mind. Developing this project has been a thoughtful process and multi-year commitment to offer lessons for classrooms across the state.

Wyoming educators, in collaboration with field experts and the Wyoming Department of Education, wrote, piloted, and revised the unit you are about to teach in your classroom. We are tremendously grateful for their efforts. These units are not intended to be a burden but were created purposefully to be easy-to-use, cross-curricular, and comprehensive. Units build on each other throughout the grades. However, they can be used independently without loss of integrity.

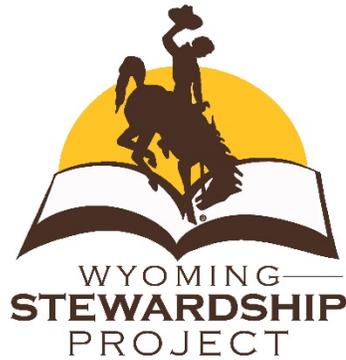
Found in the Educator Essentials document is everything needed to be prepared to teach this unit. We outline the Higher Order Thinking Skills and how to identify them throughout the units. We have compiled a material list of everything you need to complete all lessons: worksheets, PowerPoints, and video links are included in individual lessons. Additionally, a '101' sheet has been included to give you background information for the highlighted industry in Wyoming.

Our hope for the Wyoming Stewardship Project is to empower students to be our critical thinkers and problem solvers of tomorrow. We believe the stewardship definition captures the overall intent: As Wyoming citizens, we are stewards entrusted with the responsible development, care, and use of our resources to benefit current and future generations.

Thank you again for your effort in the classroom, presenting these lessons to your students, and helping advance this pivotal project for our state. Please don't hesitate to contact us with questions!

Jessie Dafoe

Executive Director
Wyoming Agriculture in the Classroom



Teacher Preparation and Required Materials

The critical work of Higher Order Thinking Skills (HOTS) involves breaking down complex material into parts, detecting relationships, combining new and familiar information creatively within limits set by the context, and combining and using all previous levels in evaluating or making judgments. Within each lesson you'll find reference to the Higher Order Thinking Skills that are part of the work students will be doing using language from Bloom's Taxonomy: Analysis, Synthesis, Application, and Evaluation.

- Analysis skills are used in areas with this symbol: 
- Synthesis skills are used in areas with this symbol: 
- Application skills are used in areas with this symbol: 
- Evaluation skills are used in areas with this symbol: 

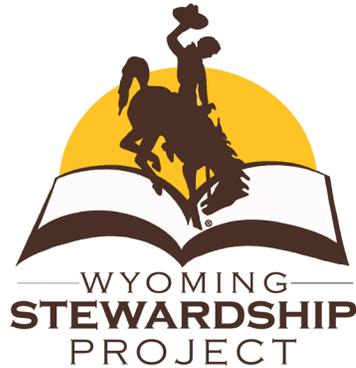
The following ideas and content will be important to know for this unit:

- Become familiar with the diversity of Wyoming's wildlife (deer, elk, pronghorn antelope, bison, etc.); plants (sagebrush, Indian paintbrush, etc.); and recreation opportunities (hunting, fishing, skiing, camping, etc.).
- Have an understanding of the damage noxious weeds and invasive species can do to habitats.

- Recognize and learn about the variety of ways Wyoming organizations manage our public and private lands from noxious weeds, invasive species, and overpopulation of animals.

The following materials will be needed for this unit:

- Chart paper
- Highlighters
- Student journals
- Poker chips or counters (3 per student)
- Clipboard
- Yellow and green paper (one yellow and two green pieces per student)
- Scissors for teacher
- White paper (multiple pieces per student)
- Markers, crayons
- Equity sticks, a randomizer, or any other tool ensuring all students participate
- Guest speaker from local Game and Fish, Weed and Pest, or Parks and Recreation offices (optional for Lesson 5)
- Guests to review your classroom presentation (optional for Lesson 6)



Outdoor Recreation & Tourism 101

Wyoming Outdoor Recreation & Tourism at a glance:

The below bullet points are taken directly from the *Wyoming Travel Impacts, 2000 – 2016 Report* prepared by Dean Runyan Associates. This addresses overall travel and tourism but gives a good indication of the importance of this industry

STATE SUMMARY: DIRECT IMPACTS OF TRAVEL IN WYOMING

- Travel spending by all domestic and international visitors in Wyoming was approximately \$3.2 billion in 2016. This is equivalent to approximately \$8.9 million dollars per day.
- Overall, travel spending in Wyoming has increased 4.3 percent per year since 2000. In constant dollars (adjusted for inflation), travel spending has increased by about 2.7 percent per year over the same period.
- Visitors who stayed overnight in commercial lodging facilities spent \$1.8 billion in 2016 - more than half (58 percent) of all visitor spending in the state. Visitors who stayed in public and private campgrounds spent \$563 million, or about 18 percent of all visitor spending.
- During 2016, travel spending in Wyoming directly supported approximately 32,000 jobs with travel-generated earnings of \$894 million. Travel spending generated the greatest number of jobs in accommodations, recreation, and food service industries.
- Local and state tax revenues generated by travel spending were about \$171 million in 2016 (property taxes not included). Without these, travel generated tax revenues, each household in Wyoming would

have had to pay an additional \$730 in taxes per year to maintain these current state and local tax revenues.

Wyoming Outdoor Recreation & Tourism Overview

Below this overview is a table that displays land ownership and who owns/manages the land. We encourage every teacher to review this before teaching this unit. While many of these lessons focus on public land, it is important to recognize that private land also plays an important role in recreation and tourism. Private landowners grant access for hunting and fishing, establish hunting and dude ranches, and contribute to the open spaces, and wildlife habitat that make Wyoming so desirable for recreation and tourism.

The beautiful landscape of northwest Wyoming attracted the attention of settlers, and scientists alike. Wyoming pioneered the first national park, first national monument, and first national forest, making this unique land a hot spot for early tourists.

In 1872, before Wyoming was even a state, President Ulysses S. Grant designated Yellowstone as the nation's first national park. Yellowstone is home to remarkable hot springs, geysers, and wildlife. Its fame draws people worldwide to experience the breathtaking sights and natural beauty.

In 1906, the northeastern side of Wyoming became home to the first national monument. Devils Tower, a geological wonder, was handed this designation by President Theodore Roosevelt. This volcanic tower rises 867 feet from summit to base. On average, over 400,000 visitors come to hike around its base or climb its columns. Another outdoor first for Wyoming was the Shoshone National Forest. Created in 1891, it remains one of the wildest parts of the continental United States. This forest provides chances for people to hunt, hike, camp, and fish.

Wyoming became known world-wide through Buffalo Bill Cody's Wild West Show, which sensationalized the wild West. Wyoming continues to welcome tourists who are seeking a taste of the West and take pleasure in Wyoming's extraordinary lands. The state hosts an average of 8.5 million overnight visitors a year. These travelers and the people in Wyoming have the chance to enjoy the diverse landscape from mountains to vast grasslands.

Nearly half (48 percent) of Wyoming is federal public land and the State of Wyoming owns another 5.6%. Not only does Wyoming have beautiful scenery, it offers history in various forms. In addition to the Ft. Laramie National Historic Site, there are twenty-five Natural Historic Landmarks and two national monuments, Devils Tower and Fossil Butte. To keep these destinations accessible, private land owners, along with state and federal agencies, such as the Wyoming Game and Fish Department, National Forest Service, and Bureau of Land Management work to provide balance in conserving these resources for future generations.

Wyoming Lands

LANDOWNERS	Acres	Sq Miles	%
United States Government			
National Park Service	2,223,083	3472	3.50
Forest Service	9,166,805	14324	14.62
Fish and Wildlife	72,449	112	0.12
Bureau of Land Mgt.	17,508,808	27359	27.92
Bureau of Indian Affairs	1,540,133	2407	2.46
Bureau of Reclamation	411,985	644	0.66
Other Federal Managed Lands	78,054	121	0.12
Wyoming			
State Lands	3,612,571	5642	5.76
State (State Parks & Hist Sites)	61,319	96	0.10
State (Wyoming Game and Fish)	187,747	294	0.30
Local Government	9,701	15	0.02
Surface Water	435,596	681	0.69
Total Private	27,406,262	42820	43.70
Total Public	35,308,251	55169	56.30
TOTAL AREA	62,714,513	97,987	

Source: Information compiled by Wyoming Association of Conservation Districts - 2017. Statistical information obtained from 2014 Bureau of Land Management dataset.

Land Ownership

Private property

Private property rights are fundamental to Wyoming. Private property includes land owned by a person or group and kept for their exclusive use. Every person has the right to own private property and enjoy using it. This also includes the right to prohibit other people from using it. The Wyoming Constitution protects private property rights from the government taking ownership of the land (eminent domain) or by other people taking ownership of the land by stating "Private property shall not be taken for private use unless by consent of the owner, except for private ways of necessity, and for reservoirs, drains, flumes, or ditches on or across the lands of others for agricultural, mining, milling, domestic, or sanitary purposes, nor in any case without due compensation." Furthermore, "Private property shall not be taken or damaged for public or private use without just compensation."

Students should be aware of the importance of private property in Wyoming and the understanding that someone who does not own a certain parcel of private land cannot cross or be on that land for recreation or tourism use without permission from the owner. Private property use is respected under the law. Many private landowners do create access for recreation in providing hunting and fishing opportunities, as well as development access. However, if someone wants to cross land they do not own, they must acquire permission, generally by purchasing certain rights to use the land from the person who owns the land.

State lands

State lands include land granted to the state of Wyoming by the United States upon the admission of Wyoming to the Union; these lands are commonly known as State Trust Lands. According to the Office of State Lands and Investments, "When Wyoming became a state on July 10, 1890, the federal government granted approximately 4.2 million acres of land (known as State Trust Lands) to the State of Wyoming. The law requires state land to be held in trust to produce income to support public schools and other state institutions named in the original grants." These lands held by the State of Wyoming provide a huge benefit for our youth and their education by generating income from leasing land for livestock grazing, outfitting, energy

production and mineral production. Students should understand the importance of stewardship of this land to be managed in a ways that promotes sustainable multiple use while providing income to the institutions which the land was granted to benefit.

For example, there are other state lands, such as the University of Wyoming land, that is owned by the university and used for its research and other purposes. Another category of state land includes State parks. State parks, much like national parks, are reserved to be enjoyed by the public for recreation and tourism and do not generate income through development. Additionally, there is specific Wyoming land managed by the Wyoming Game & Fish Department.

Federal lands

Federal lands have six primary administrating agencies: Bureau of Land Management (BLM), Forest Service (FS), Fish and Wildlife Service (FWS), National Park Service (NPS), the Department of Defense (DOD), and the Bureau of Reclamation (BOR). The BLM, FS, FWS, and NPS lands are the primary agencies/federal land focused on by the Wyoming Stewardship Project.

DOD lands consist primarily of military bases and training ranges. The BOR has projects in 17 western states including Wyoming. The Wyoming Stewardship Project does not focus specifically on these projects/land areas.

The BLM, FS, NPS, and FWS have unique missions for each agency. BLM and FS lands are managed under the principles of multiple use and sustained yields. For other lands, such as wildlife refuges managed by FWS, the land is managed for wildlife with only limited private economic uses. By and large, the other federal land is managed for a wide range of multiple uses including the timber harvest, mining and oil and gas development, grazing, outfitting, recreation, wildlife habitat, water supply protection and other productive uses of the land.

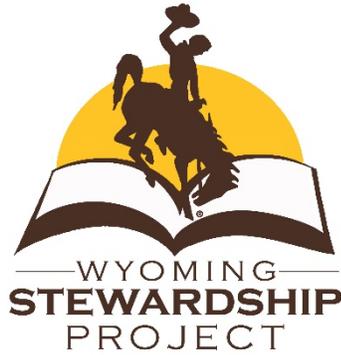
National parks, on the other hand, are set aside primarily for site preservation and used primarily for recreation and tourism purposes. In addition to the national parks are monuments and trails. Wyoming has a rich

resource within these lands for Wyomingites to enjoy and steward for many to benefit from these lands for time to come.

Stewardship

As Wyoming citizens, we are entrusted with the responsible development, care, and use of our resources to benefit current and future generations.





Lesson One: Plants, Wildlife, Recreation, Oh My!

Grade Level: 3rd Grade

Time: 60 minutes

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

Objective: Students will identify plants, wildlife, and recreation in Wyoming.

Purpose: Students learn about public and private lands and understand how they are unique in Wyoming.

Required Materials/Resources:

- Land Ownership Map of Wyoming (Source 1)
- WOT Road Trip Map (Source 2)
- Chart paper
- *History of Public Lands in Wyoming* (one copy per student and one for the teacher) (Sources 3-5)
- Highlighters
- Title Cards - Plants, Wildlife, Recreation
- Picture Cards of plants, wildlife, and recreational activities in Wyoming (one per student, although if your class is small enough, students can have more than one card) (print front to back, flip on short edge)
- Student journals

Suggested Teacher Preparation:

- Prepare "Notice and Wonder" anchor chart.
- Divide students into small groups of no more than four or five students per group.
- Post the Title Cards around the room where all students can see them.

TEACHER NOTE:

Wyoming also contains lands known as State Trust Lands. These are lands granted to Wyoming and designated to generate revenue for public schools and other state institutions. While they are owned by the state, public access is limited depending on location and designated use. To avoid confusion, we have limited the definition of public lands in this unit to focus only on federal lands and state parks.

- Make copies Picture Cards and the Discussion Question Cards back to back.
- Read the *History of Public Lands in Wyoming* and review the Land Ownership Map of Wyoming and the WOT Road Trip Map.
- Become familiar with the diversity of Wyoming’s wildlife (deer, elk, pronghorn antelope, bison, etc.), plants (sagebrush, Indian paintbrush, etc.), and recreation (hunting, fishing, skiing, camping, etc.).
- Have notebooks or folders to use as student journals.
- Be able to display the prompt in step 7.

Standards:

Social Studies: SS5.5.1, SS5.5.2 (Practiced/Encountered)

ELA: 3.RI.1, 3.RI.7, 3.SL.1 (Practiced/Encountered)

Vocabulary:

- **Attributes** - a quality or feature of someone or something
- **Characteristic** - a feature or quality belonging typically to a person, place, or thing and serving to identify it
- **Plant** - a living thing that relies on photosynthesis
- **Public land** - land owned by a government; may or may not be accessible to the public
- **Private land** - land owned by a person or group and kept for their exclusive use; permission and access for any purpose must be granted by the owner
- **Recreation** - an activity that is undertaken for pleasure or relaxation
- **Unique** - being the only one of its kind; unlike anything else
- **Wildlife** - living things, especially mammals, birds, and fish that are neither human nor domesticated

Instructional Procedure/Steps:

1. Share with students the definition of public lands. Display the Land Ownership Map of Wyoming and the WOT Road Trip map, and ask the following questions:
 - **“What do you notice and wonder about these maps?”**
 - **“How are they similar?”**

- **“How are they different?”**
- **“Why might certain areas be public lands?”**
- **“What does the yellow on the map indicate?”**
- **“What does it mean that the land is privately owned?”**

Allow students to respond, and chart student responses. Keep and post this anchor chart to see if what students wonder about is answered later in the unit. Say:

“Wyoming has both national parks and national forests. They are located on public lands.” Pass out the *History of Public Lands in Wyoming* texts. Read it aloud. Pass out highlighters, and have students listen and highlight important facts and information while the text is read.

2. Place students into their small groups. Give students four to seven minutes and have them share out facts they highlighted in the text. One student starts by sharing a fact and then the next student continues on, so each student gets a turn. Students repeat the process until time is up.
3. When time has expired, provide students with the definition of unique, and say: **“We are now going to discuss three reasons why Wyoming lands are unique.”**
4. Pass out the picture cards of plants, wildlife, and recreation to students. Point out the title cards posted around the room and show students that the questions appear on the cards also. Say: **“Our classroom represents Wyoming lands. Each card represents one of the categories (plants, wildlife, or recreation) found on Wyoming’s lands.”**
5. Have students match their cards with the appropriate category then move to that area. Once there, students discuss with other students in their group what they notice about the cards in their category using the

discussion questions on the back of the cards.

- When all groups have finished discussing the questions, have students return to their seats. Pick six students, two from each category, to share what they noticed/discussed when they were working in their groups. Allow students to add any wildlife, plants, or recreational activities they can think of that are unique to Wyoming and were not included on the picture cards. When students are finished sharing, say: **“These three categories make Wyoming unique because we have such a variety of examples in all of them. It does not mean that these plants, animals, and recreational opportunities don’t grow, live, or happen anywhere else. Wyoming is special and unique because we have all of them together. We are lucky to live in such a diverse place.”**



In this task, students will be engaged in the higher order thinking skill of synthesis by predicting possible outcomes if public lands went away.

Assessment:



Pass out Student Journals. In their journals, have students copy and respond to the following prompt:

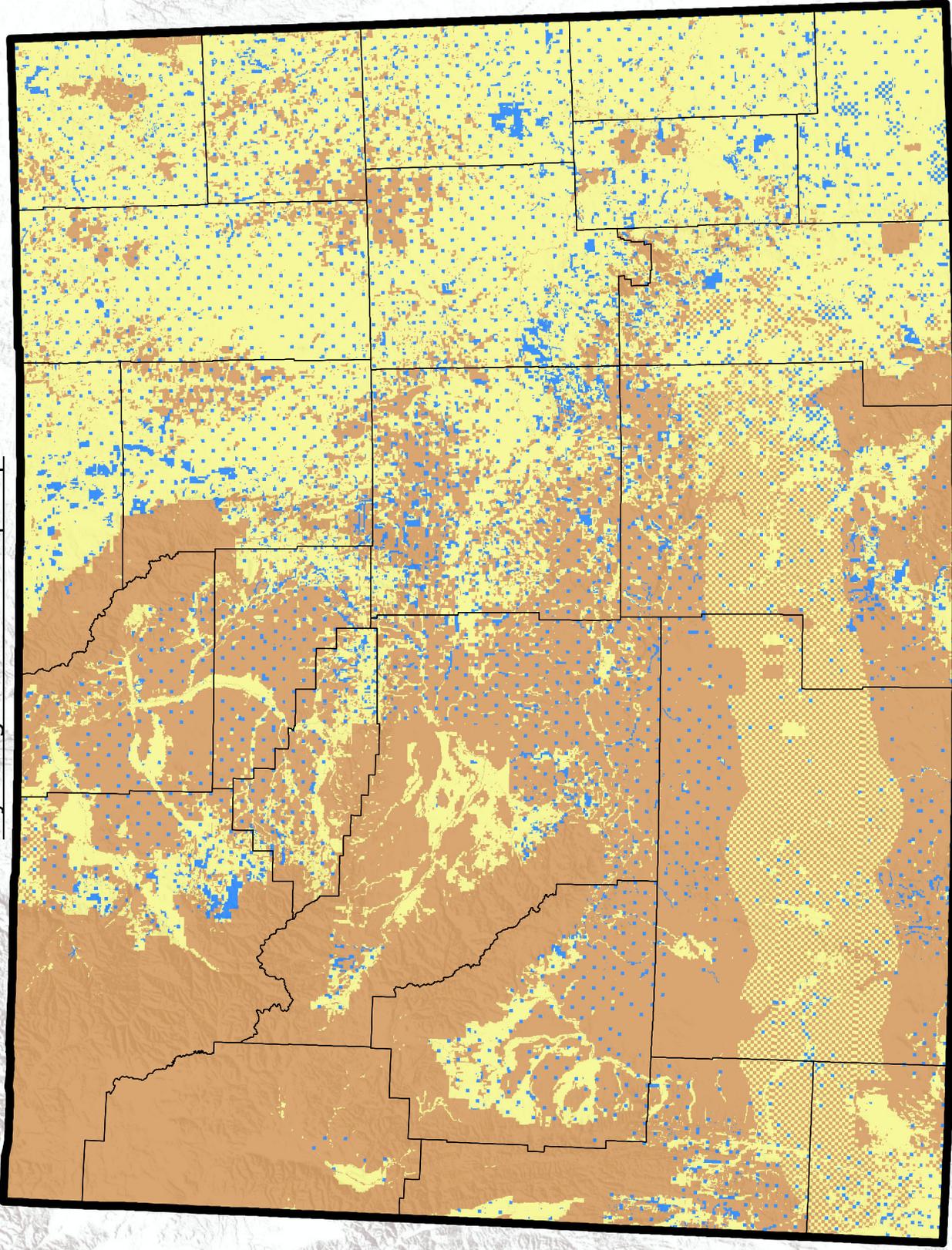
- Wyoming’s land is unique because _____ . Another reason the land in Wyoming is unique is _____ . Since these attributes make Wyoming unique, what do you think might happen if the opportunity to enjoy them went away?**

Collect journals when students are finished. Student responses should highlight the variety of the wildlife, plants, and recreation that is available in Wyoming. Possible answers: *Wyoming’s public land is unique because I can be outdoors in more than half of my state. Another reason the land in Wyoming is unique is I can see many different kinds of wildlife when I am outdoors. I think if these attributes went away, Wyoming would not have variety anymore and would no longer be unique.*

Credit/Sources:

1. Wyoming Association of Conservation Districts. (2017, July 27). *Wyoming Land Ownership Map*. Cheyenne, Wyoming.
2. Travel Wyoming.com. (n.d.). *WOT Road Trip Map*. Retrieved September 7, 2018, from https://www.travelwyoming.com/sites/default/site-files/files/uploads/WOT_Road%20Trip%20Map%20FINAL%2C%204.19.17.pdf
3. Legends of America. (2003-present). *Wyoming Legends: Old West History of Wyoming*. Retrieved August 13, 2017, from <http://www.legendsofamerica.com/wy-timeline.html>
4. State of Wyoming. (2018). *Wyoming History*. Retrieved August 13, 2017, from <http://www.wyo.gov/about-wyoming/wyoming-history>
5. Wyoming Office of Tourism, Cameron Ross, Strategic Partnerships Senior Manager.

Wyoming Land Ownership Map



Source: Surface Ownership information obtained from 2014 Bureau of Land Management dataset.

Legend

- Counties
- Wyoming
- Federal, Other State, Local Government
- State Trust Land
- Private Ownership



97,818 SQUARE MILES OF TRAILS LESS TRAVELED

The memories are enough reason to make your way across Wyoming. But a few mementos are a nice perk. Explore Mother Nature's most breathtaking creations, like Yellowstone National Park, Devils Tower, and the Grand Tetons. Along the way, pick up collectible stickers that pay tribute to Wyoming's many areas of rugged majesty and possibility.

KEY

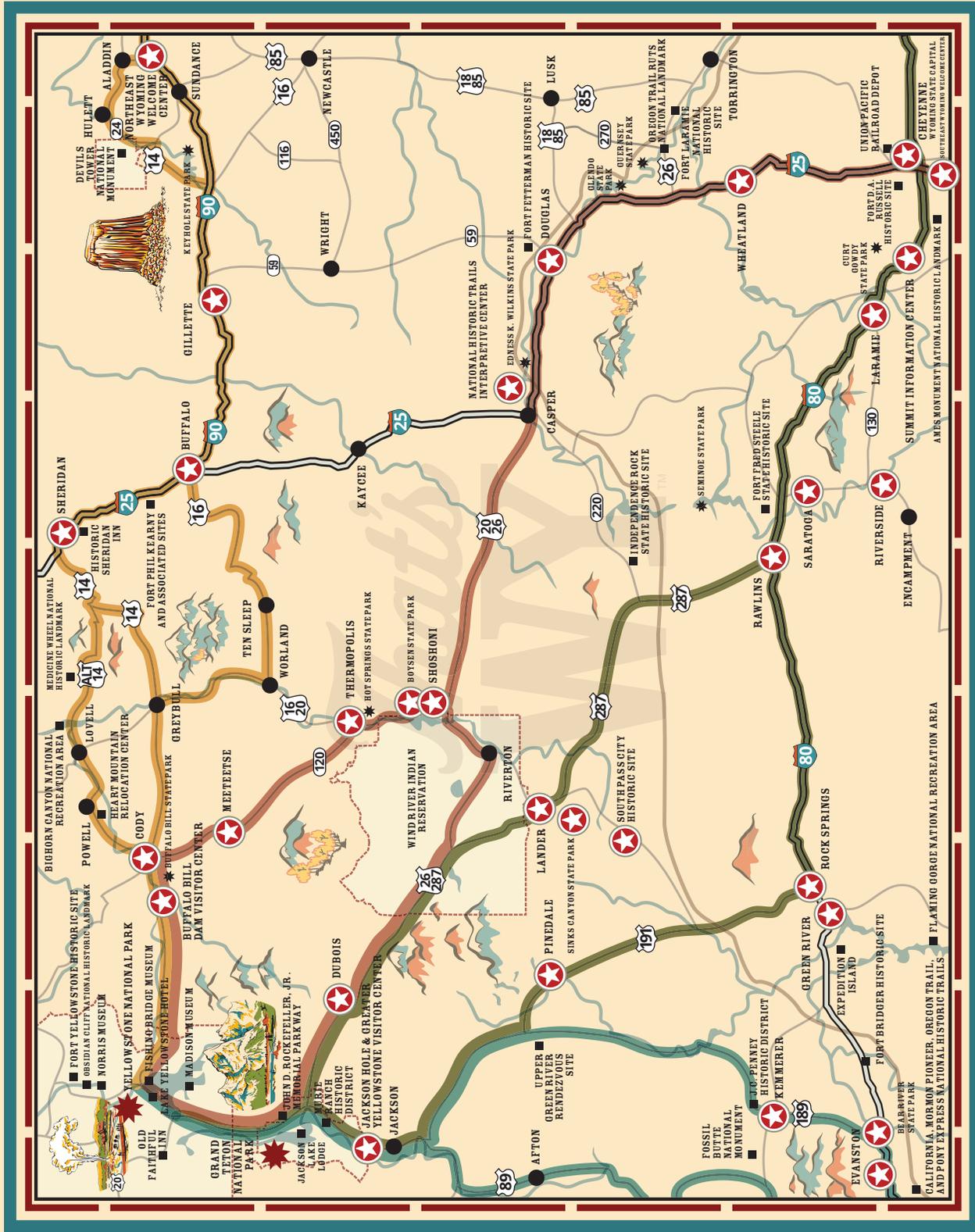
- SALT TO STONE ROUTE
- ROCKIES TO TETONS ROUTE
- PARK TO PARK ROUTE
- BLACK TO YELLOW ROUTE
- STICKERS LOCATED HERE
- NATIONAL PARK
- STATE PARK
- MONUMENT/LANDMARK
- CITY/TOWN
- CALIFORNIA, MORMON PIONEER, OREGON TRAIL, AND PONY EXPRESS
- PARK BOUNDARY



TRACK YOUR TRIP
#ThatsWY

TravelWyoming.com/maps

Grade 3 - Outdoor Recreation & Tourism - Lesson 1



EVERY ROAD LEADS TO ADVENTURE. AND STICKERS.

Collect your set of Great American Roadtrip Stickers at Wyoming Visitor Centers throughout the state.

Visit TravelWyoming.com/maps for the sticker distribution center locations.



#SalttoStone

Outdoor aficionados, amateur paleontologists, wildlife lovers and history buffs flock to the Salt to Stone region. From the Great Salt Lake to Yellowstone National Park, those who explore these starkly beautiful landscapes will find natural treasures such as Fossil Butte National Monument, Killpecker Sand Dunes, Boar's Tusk and Jackson Lake. All around the region, towns immersed in history welcome you on your way to epic outdoor activities, including hiking, biking, kayaking, boating, skiing and snowmobiling.



#RockiestoTetons

Choose a route of epic scale along the eastern slope of the Continental Divide. The Rockies to Tetons region brims with a wide array of only-in-Wyoming experiences. Home to the Western-rooted capital city of Cheyenne; the Wind River Indian Reservation; and the snowy, Medicine Bow, Seminoe and Wind River mountain ranges, the area attracts both culture vultures and adventure seekers.



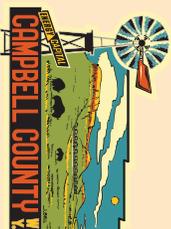
#ParktoPark

Follow the path of those who came before us on your way to Yellowstone. Stretch your legs on the historic trails winding through the heart of Wyoming and learn about the dinosaurs that trekked them more than 100 million years ago in the Big Horn Basin. Scenery straight out of an adventure magazine and plenty of welcoming towns make the Park to Park region ideal for a variety of getaways. From rugged backcountry escapes, to relaxing hot springs retreats.



#BlacktoYellow

Begin the adventure long before Yellowstone National Park's east entrance with detours through Wyoming's Black Hills National Forest, Devils Tower National Monument and Big Horn Canyon National Recreation Area. With little traffic, fewer people and wide-open skies, the Black to Yellow region will redefine your concept of fresh air. Dotting the spectacular landscape, you'll find charming towns where 19th-century hotels, shops and restaurants still welcome travelers and outdoor recreation abound. Acres of public land, sagebrush plains and rolling hills set the scene for trips ranging from family outings to solitary adventures.



TRACK YOUR TRIP #That'sWY

History of Public Lands in Wyoming

Wyoming has a variety of public lands for everyone to enjoy. In fact, over half of the land of our state is public land. Public land is land owned by a government. This land includes our national and state parks, monuments, national forests, wilderness areas, some waterways, and wildlife preserves.

It is important for stewards to keep these destinations cared for, so all people can enjoy the recreation opportunities that are available. Private land owners, along with state and federal agencies, such as the Wyoming Game and Fish Department, U.S. Forest Service, and Bureau of Land Management (BLM), work to provide balance in conserving resources on public lands for future generations.

Tourism and recreation create a variety of jobs and income for communities in our state. These fields employ more people in our state than you might realize. Outfitters, guides, hotel workers, and even fast food servers support this important industry.

Wyoming is unique for being the first of many events. The first national park, first national forest, and the first national monument. Wyoming's diversity draws scientists and tourists alike. Resources such as wildlife, forests, and waterways draw even more people to the state. They enjoy riding and hiking trails, fishing, hunting trophy game, and more! Because Wyoming is so unique, the citizens have been balancing the needs to conserve these resources and allow for public enjoyment and use.



Vedauwoo Recreation Area



Jackson Lake and Grand Teton National Park



Bison in Yellowstone National Park



PLANTS

Discussion Questions:

- 1) What do you notice about the plants in your group?
- 2) Are the plants all the same?
- 3) What are some characteristics of the plants in your group?

Wildlife

Discussion Questions:

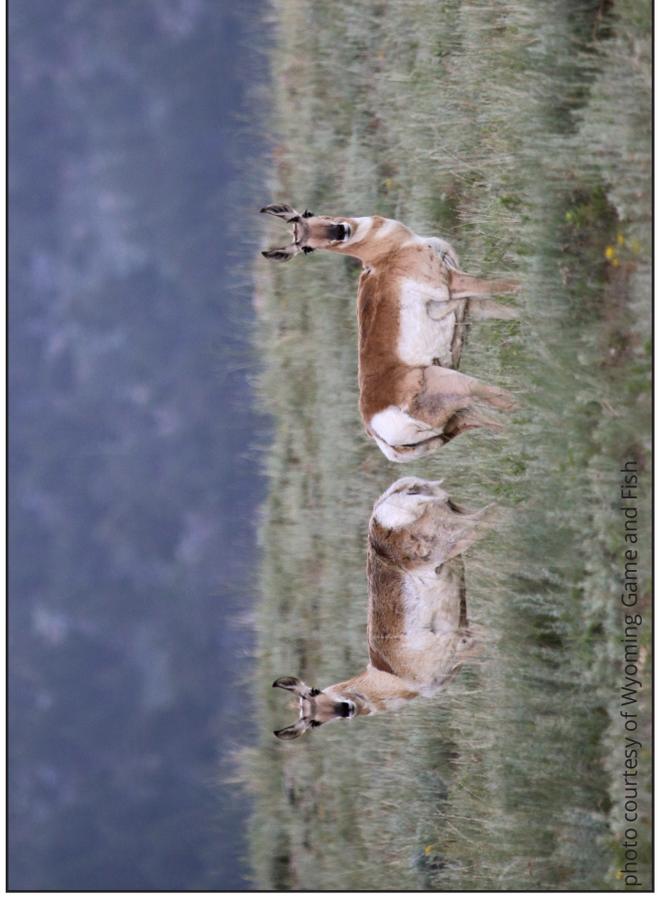
- 1) What do you notice about the animals in your group?
- 2) Are the animals all the same?
- 3) What are some characteristics of the animals in your group?

Recreation

Discussion Questions:

- 1) What do you notice about the recreational activities in your group?
- 2) Are the activities all the same?
- 3) What are some characteristics of this activity?

Picture Cards



Picture Cards

Discussion Questions

- What do you notice about the animals in your group? Are the animals all the same? What are some characteristics of the animals in your group?

Discussion Questions

- What do you notice about the animals in your group? Are the animals all the same? What are some characteristics of the animals in your group?

Discussion Questions

- What do you notice about the animals in your group? Are the animals all the same? What are some characteristics of the animals in your group?

Discussion Questions

- What do you notice about the animals in your group? Are the animals all the same? What are some characteristics of the animals in your group?



Picture Cards



photo courtesy of Wyoming Game and Fish



photo courtesy of Wyoming Game and Fish



photo courtesy of Wyoming Game and Fish



photo courtesy of Wyoming Game and Fish



Picture Cards

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photo courtesy of Wyoming Game and Fish



photo courtesy of Wyoming Game and Fish



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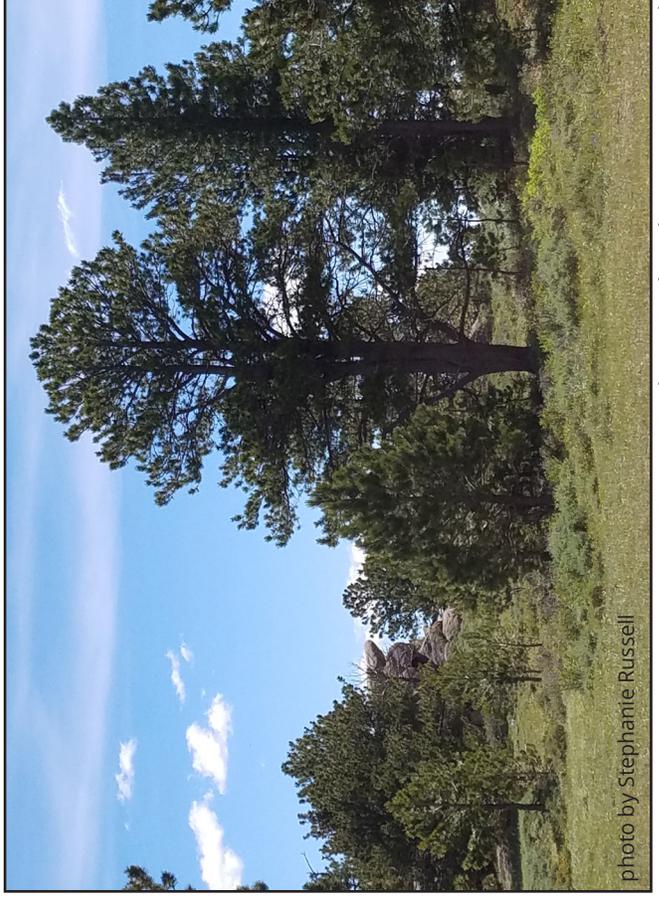


photo by Stephanie Russell



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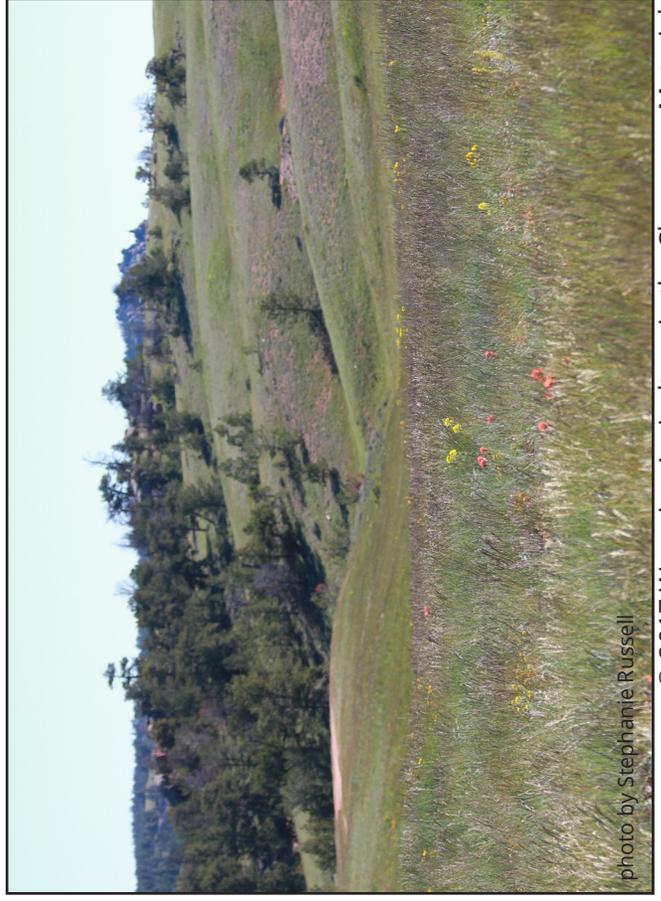
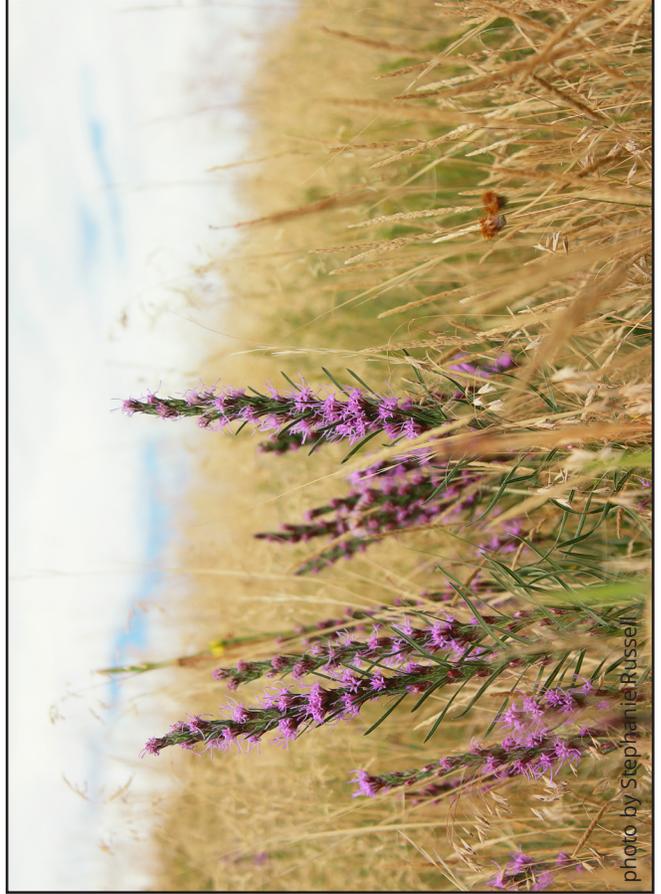
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© 2017 Wyoming Agriculture in the Classroom Materials



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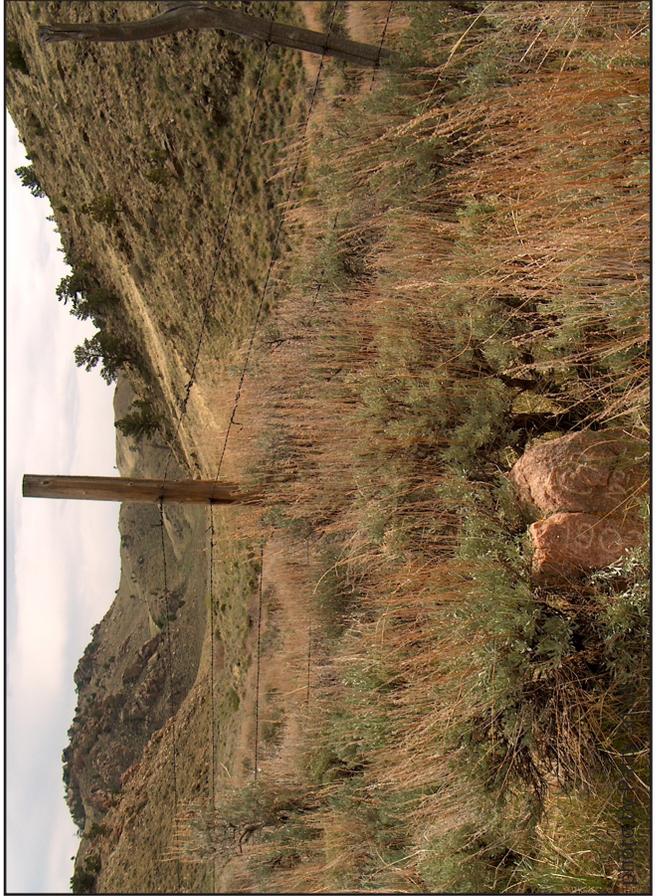
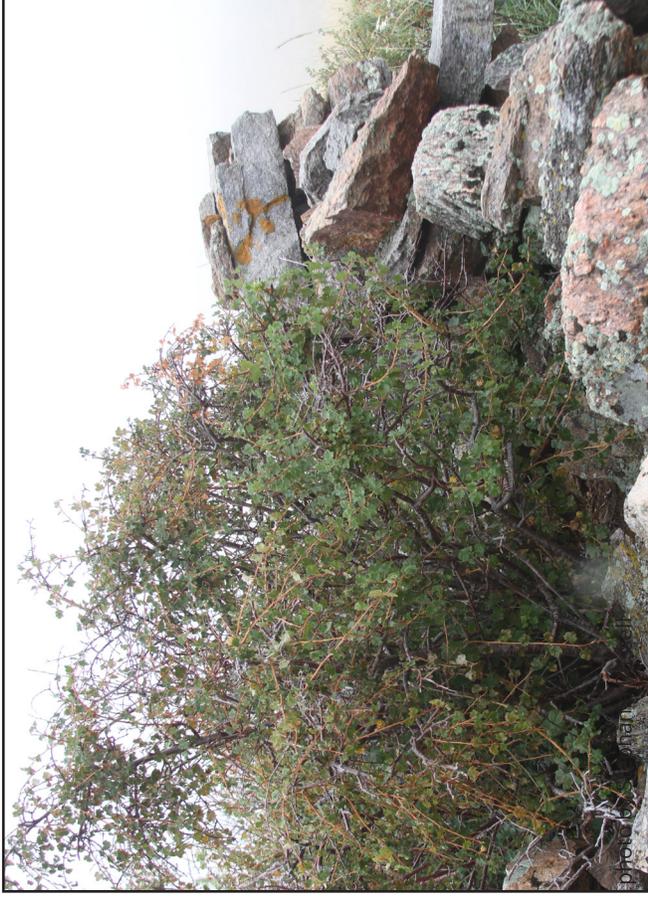
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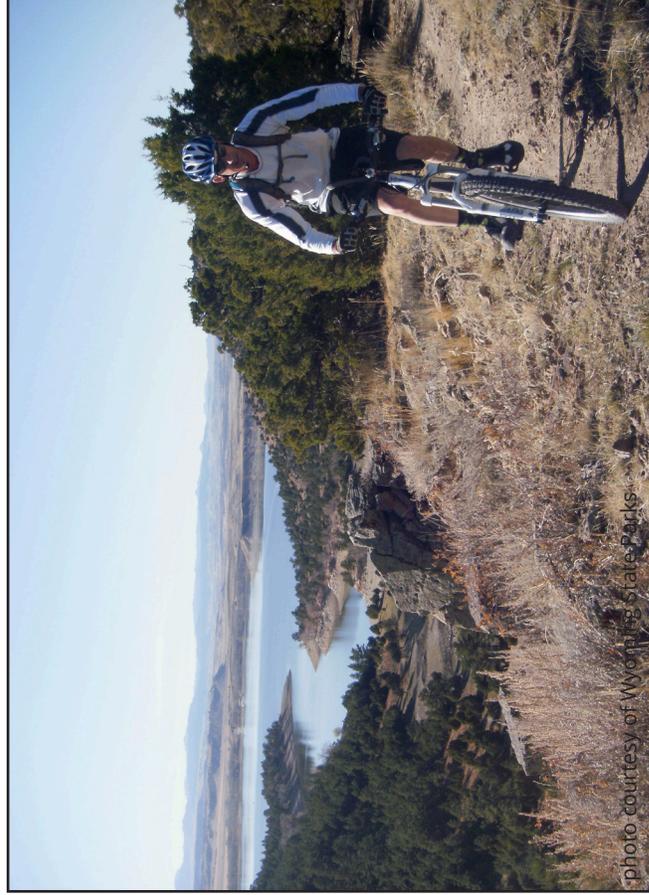
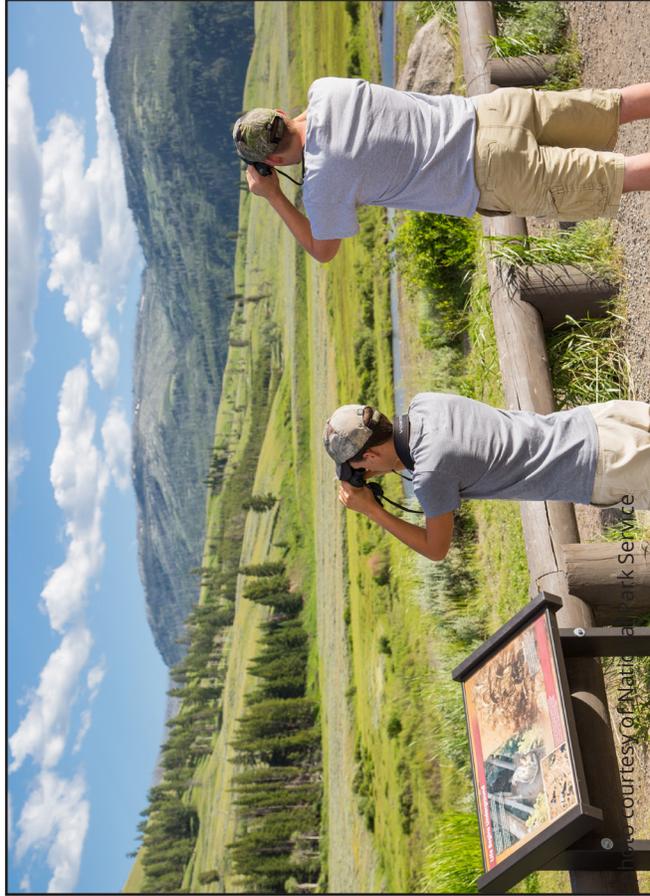
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© 2017 Wyoming Agriculture in the Classroom Materials



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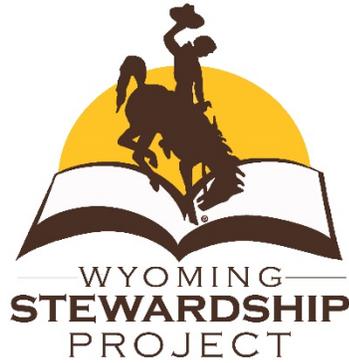
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Lesson Two: Digging Deeper

Grade Level: 3rd Grade

Time: 45-60 minutes

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

Objective: Students will be able to show how lands are used for wildlife and recreation in Wyoming.

Purpose: Students learn how lands are developed, cared for, and used.

Required Materials/Resources:

- Stewardship Poster
- Chart paper
- *Digging Deeper* graphic organizer (one per student and one for the teacher to model)
- *Bitterroot Ranch – 2018 Landowner of the Year* (Source 1)
- *Winter Wildlife in Wyoming* text (Source 2)
- *Outdoor Adventure Haven* text (Source 3)
- *Yellowstone in Winter* text (Source 4)
- Wyoming Agriculture in the Classroom website <https://wyaitc.org/curriculum/student-resources/> (Source 5) - Students can access the four texts listed above at this link.

Suggested Teacher Preparation:

- Decide whether you are doing version A or B of the lesson.
- Become familiar with navigating the Wyoming Agriculture in the Classroom website.
- Reserve computers or other devices.

TEACHER NOTE: If you don't want to type in the entire URL, go to www.wyaitc.org. Hover over "Curriculum", then "Student Resources." The articles are all found under "Grade 3," then "Outdoor Recreation & Tourism." These articles have been adapted from the original source documents for length and age-appropriateness. Original documents can be found at the links provided in the Credits/Sources.

- If you do not have access to devices, assign texts to students and make the appropriate number of copies.
- Display the Stewardship Poster.
- Create anchor chart titled “Wildlife and Recreation in Wyoming.”

Standards:

Science: 3-LS4-3 (DCI) - (Practiced/ Encountered)

Social Studies: SS5.6.3 (Explicit if taught using electronic devices),

SS5.1.1, SS5.5.4 (Practiced/Encountered)

ELA: 3.RI.1, 3.SL.3 (Explicit), 3.RI.7, 3.W.7, 3.W.8, 3.SL.1, 3.SL.4 (Practiced/Encountered)

CVE: CV5.2.2, CV5.4.1 (Practiced/Encountered)

Vocabulary:

- **Entrust** - to give somebody the responsibility of doing something or of caring for someone or something
- **Generation** - a group of individuals, most of whom are the same approximate age
- **Public land** - land owned by a government; may or may not be accessible to the public
- **Private land** - land owned by a person or group and kept for their exclusive use; permission and access for any purpose must be granted by the owner
- **State Trust Lands** - lands that were granted to Wyoming and designated to generate revenue for public schools and other state institutions
- **Stewardship** - As Wyoming citizens, we are stewards entrusted with the responsible development, care, and use of our resources to benefit current and future generations.

TEACHER NOTE:

The lesson is broken into Version A and Version B. Version A is for classrooms with one-to-one internet and device access. If you do not have device access, follow the instructions found in Version B.

Instructional Procedure/Steps:

1. Say: **“In our previous lesson, we discussed Wyoming’s plants, wildlife, and recreation. Today, we are going to discuss the term stewardship. Practicing stewardship ensures that the things we enjoy today**

in Wyoming will be here in the future for others to enjoy.” Read the Stewardship Poster: **“As Wyoming citizens, we are stewards entrusted with the responsible development, care, and use of our resources to benefit current and future generations.”**

Discuss with students what it means to be a steward. Be sure to emphasize the word entrust(ed). Say the definition of entrust: **“To give somebody the responsibility of doing something or of caring for someone or something.”** Ask students if there are other words in the stewardship definition that they do not understand. Clarify any misunderstandings for students.

Version A (With Electronic Devices):

2. Say: **“We are responsible as stewards to develop, use, and care for Wyoming lands. What this means is that we make sure that the wildlife, plants, and areas designated for recreational activities are still here to enjoy years from now. In Lesson 1, we brainstormed some unique things found in Wyoming. Now let’s see exactly how we use and care for the land in Wyoming.”** Pass out the “Digging Deeper” graphic organizers.

3. Say: **“You are going to each read a text and complete the graphic organizer about it to show what you learned.”** Model completing the graphic organizer by using the “Bitterroot Ranch” text. Access the text online and display the graphic organizer to the class. Read through the text, and model how to complete the graphic organizer.

4.  When finished modeling, assign electronic devices, and have students access the Wyoming Agriculture in the Classroom website. <https://wyaitc.org/curriculum/student-resources/> Say: **“You will now choose a text to read. You will become**



In this task, students will be engaged in the higher order thinking skill of synthesis by working through answering lower level questions and synthesizing information in the text to answer the final question.

the ‘expert’ on this text. As you read, take notes on the important facts and ideas that the text mentions. The questions on the graphic organizer will help guide you on what you should be looking for. Questions?”

Clarify any questions about the activity that students have.

5. When students have finished reading, have students Give One, Get One. Students share the information from their text with a partner who read a different one. The first student has 30 seconds to share interesting information while the other student listens. When the first student is done sharing, the other student can ask questions about new or confusing ideas and give a positive comment about what he/she heard. Students then switch roles. When both partners have shared, students should find a new partner. Say: **“Here is an example. If I read the “Winter Wildlife in Wyoming” text, I would tell my partner an interesting fact that I learned, such as the National Elk Refuge is a winter sanctuary for Jackson’s elk herd. Then they would tell me something they learned in their reading.”** Teachers may opt to have students write down the facts that they collect during this activity. If you choose to do so, have students take notes on the back of their graphic organizers.
6. Once students have shared their knowledge with five other students, have them reconvene as a whole class to create an anchor chart titled “Wildlife and Recreation in Wyoming.” The students should take the information they learned from their own texts and through their classmates’ knowledge to list the wildlife and recreational activities that take place on Wyoming’s public lands.

Assessment: For assessment purposes, listen while students complete the Give One, Get One activity. It should give a quick check of the understanding of activities and animals, which can

be found in Wyoming. The anchor chart the class generates should also demonstrate their understanding. Collect the students' graphic organizers to see individual evidence of understanding through the final question.

Version B (Without Electronic Devices):

1. Say: **“We are responsible as stewards to develop, use, and care for Wyoming lands. This means that we make sure that the wildlife, plants, and areas designated for recreational activities are still here to enjoy years from now. In lesson one, we brainstormed some of unique things that are found in Wyoming. Now let’s see exactly how we use and care for the land in Wyoming.”** Pass out the “Digging Deeper” graphic organizers.
2. Say: **“You are going to each read a text and complete the graphic organizer about it to show what you have learned.”** Model completing the graphic organizer by using the “Bitterroot Ranch” text. Access the text online and display the graphic organizer to the class. Read through the text and model how to complete the graphic organizer.
3.  When finished modeling, pass out the assigned copies of the texts. Say: **“Read your assigned text. You will become the ‘expert’ on this text. As you read, take notes on the important facts and ideas that the text mentions. The questions on the graphic organizer will help guide you on what you should be looking for. Questions?”** Clarify any questions about the activity that students have.
4. When students have finished reading, have students Give One, Get One. Students share the information from their text with a partner who read a different one. The first student has 30 seconds to share interesting information



In this task, students will be engaged in the higher order thinking skill of synthesis by working through answering lower level questions and synthesizing information in the text to answer the final question.

while the other student listens. When the first student is done sharing, the other student can ask questions about new or confusing ideas and give a positive comment about what he/she heard. Students then switch roles. When both partners have shared, students should find a new partner. Say: **“Here is an example. If I read the “Winter Wildlife in Wyoming” text, I would tell my partner an interesting fact that I learned, such as the National Elk Refuge is a winter sanctuary for Jackson’s elk herd. Then they would tell me something they learned in their reading.”** Teachers may opt to have students write down the facts that they collect during this activity. If you choose to do so, have students take notes on the back of their graphic organizers.

5. Once students have shared their knowledge with five other students, have them reconvene as a whole class to create an anchor chart titled: Wildlife and Recreation in Wyoming. The students should take the information they learned from their own texts and through their classmates’ knowledge to list the wildlife and recreational activities that take place on Wyoming’s lands.

Assessment: For assessment purposes, listen while students complete the Give One, Get One activity. It should give a quick check of the understanding of activities and animals, which can be found in Wyoming. The anchor chart the class generates should also demonstrate their understanding. Collect the students’ graphic organizers to see individual evidence of understanding through the final question.

Credits/Sources:

1. Wyoming Game and Fish. (2018). *Bitterroot Ranch – 2018 Landowner of the Year – Lander Region*. Retrieved May 2, 2019, from <https://wgfd.wyo.gov/Get-Involved/Landowner-of-the-Year/2018/Bitterroot-Ranch>
2. Wyoming Office of Tourism. (2017). *Where to Spot Winter Wildlife in Wyoming*. Retrieved November 28, 2017, from <https://www.travelwyoming.com/article/winter-wildlife-wyoming>
3. Wyoming Office of Tourism. (2017, May). *Lander: Wyoming's Outdoor Adventure Haven*. Retrieved August 12, 2017, from <https://www.travelwyoming.com/article/lander-wyomings-outdoor-adventure-haven>
4. Wyoming Office of Tourism. (2018). *A Winter Guide to Yellowstone*. Retrieved September 9, 2018, from <https://www.travelwyoming.com/winter/wildlife>
5. Wyoming Agriculture in the Classroom. (2018) *Student Resources: 3rd Grade Outdoor Recreation & Tourism*. <https://wyaitc.org/curriculum/student-resources/>

Digging Deeper

Wildlife

What was the title of your article?

What wildlife did you read about?

What was something unique about this animal?

Why is Wyoming land important for this animal?

How can you as a steward use and care for Wyoming's land for wildlife?

Recreation

What was the title of your article?

What recreational activity did you read about?

What was something unique about this recreational activity?

Why is Wyoming land important for this recreational activity?

How can you as a steward use and care for Wyoming's land for recreation?



Bitterroot Ranch

2018 Landowner of the Year - Lander Region



The Bitterroot Ranch is a 2,150 acre ranch split between locations near Dubois and Riverton. Bayard Fox, his wife Mel, along with their son Richard and daughter-in-law Hadley operate this unique ranch that blends a working cattle ranch and dude ranch that provides important wildlife habitat and world class horse riding experiences for their guests. Their ranch provides excellent habitat for Yellowstone cutthroat trout, pronghorn, mule deer, elk, moose, waterfowl, and other wildlife. Grizzly bears and wolves also frequent the Dubois ranch.

Since 1971, Bayard and family have been operating the Bitterroot Ranch as a working guest ranch giving people from around the World a unique experience participating in cattle drives and the work involved in western ranching.

The East Fork that flows through their property and adjoining lands support a robust population of Yellowstone cutthroat trout along with other species such as mountain whitefish. Over the past 6 years, Bitterroot Ranch has been very engaged and active improving aquatic habitats to support this important fishery.

Once autumn's colors disappear and the Ranch's cattle and horse herds have been rounded-up from the Dubois country, they head to 1,522 acres near Pavillion that provides the forage needed during the cold winter months to sustain the herds. This low land ground also provides a smorgasbord for pronghorn, mule deer, and waterfowl throughout the calendar year with irrigated hay fields, wet meadows, and wetland areas.

Bitterroot Ranch's dedication to sustain quality wildlife and fisheries habitat, their cooperation with the Wyoming Game and Fish Department, and their overall love of wildlife and open spaces proves they are well deserving of this award.

Article reprinted from Wyoming Game & Fish Department:
<https://wgfd.wyo.gov/Get-Involved/Landowner-of-the-Year/2018/Bitterroot-Ranch>



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Winter Wildlife in Wyoming



photo credit: Bill Sincavage

WHERE TO SPOT WINTER WILDLIFE IN WYOMING

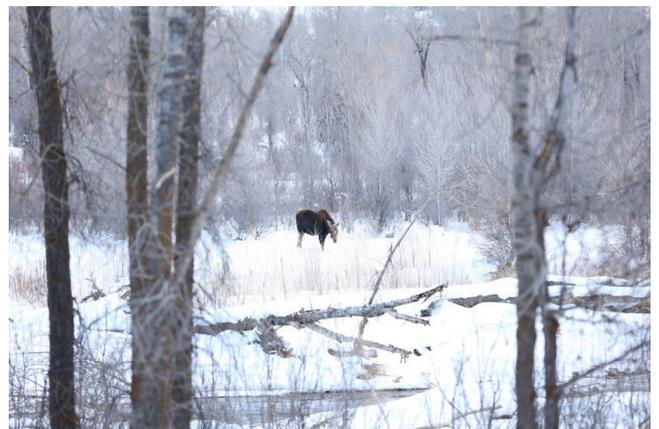
Not all of Wyoming's creatures hibernate in the winter. In fact, winter offers many opportunities to see Wyoming's wildlife through a whole new light. Bison, elk, birds and many more types of wildlife make the snow covered plains and mountains of Wyoming their winter home. Fewer crowds, deep snow and cooler temperatures make winter the best time to see wildlife in Yellowstone National Park and throughout Wyoming. Some animals you might see include pronghorn antelope, bull elk, bald eagles, bighorn sheep, bison and coyotes. Take a look at where you can spot these wild Wyoming residents this winter.

The National Elk Refuge

The National Elk Refuge is a winter sanctuary for Jackson's elk herds and other wild friends such as bison, coyotes, wolves, eagles, ravens and magpies. Bighorn sheep can frequently be seen at Miller Butte within the refuge.

Grand Teton National Park

Antelope Flats is another excellent place to catch a glimpse of wildlife in Grand Teton National Park. Look for bison, deer, elk, moose, antelope, coyotes, foxes and bald eagles. The Gros Ventre River area affords spectacular views of the Tetons and the chance to spot a moose.



Winter Wildlife in Wyoming

Seedskaadee National Wildlife Refuge

Located in Sweetwater County, Seedskaadee National Wildlife Refuge is a migration corridor for many types of birds, including hawks, finches and trumpeter swans. The refuge is also the winter hangout of rabbits, beavers, porcupines, deer and pronghorn. Because winter can be a rough time for the animals at Seedskaadee, a few of the refuge's roads are closed to vehicles in the winter to limit stress to inhabitants. Contact the refuge's headquarters before visiting for more information.

National Bighorn Sheep Interpretive Center

At the National Bighorn Sheep Interpretive Center in Dubois, life-sized dioramas and interactive exhibits tell the story of one of the region's most beloved residents: the Rocky Mountain bighorn sheep. The Whiskey Mountain area just east of Dubois is the stomping ground of the largest wintering sheep herd in North America. For a real treat, call the center to schedule a winter tour of nearby sheep herds. The areas where these majestic animals roam are also home to ancient petroglyph carved by native tribes; see if you can spot ones depicting bighorn sheep.

Casper Mountain

With about 26 miles of groomed trails, the Casper Mountain area attracts snowshoe enthusiasts and cross-country skiers in the winter. The tree-lined trails offer optimum spots to catch roaming mule deer, a variety of birds and pristine views of the valley. The Casper Mountain Trail Center is a great place to warm up and grab a bite to eat.

Will you have a 'Three Dog Day?'

If you're lucky enough to see a fox, wolf and coyote all in one day, that's considered a "Three Dog Day." Documentary filmmaker Ken Burns and his producer/writing partner Dayton Duncan had one during their first winter trip to Yellowstone. The duo toured America's first national park and saw a red fox dive into fresh snow, a pack of wolves make their presence known to a resting herd of bison and a team of coyotes on the side of the roadway. Will you be next?

Article reprinted from Travel Wyoming:

<https://www.travelwyoming.com/article/where-spot-winter-wildlife-wyoming>



Outdoor Adventure Haven



Lander: Wyoming's Outdoor Adventure Haven

The town of Lander offers the peace and tranquility of a remote mountain town with enough excitement and adventure to keep you entertained for days.

Epic rock climbing, hiking, backpacking, and fishing await you in and around this town's prized state park: Sinks Canyon. Here you'll (willingly) get lost in fields of endless wildflowers, hike to summits offering stunning views, and rock climb your way up towering crags that offer a rare thrill, only to be experienced in Wyoming's Wind River Range. Home to the annual International Rock Climbers Festival, it is no wonder that thousands of accomplished rock climbers flock to this area of the state on a regular basis.



Sure, you've got world-class rock climbing right at your finger tips, but what every visitor (self-proclaimed rock climber, family vacationer, or otherwise) will for sure experience is this town's inviting atmosphere and warm hospitality. "Lander is one of those special places people choose to visit because they feel welcome from the instant they step foot in our community," said Gary Michaud, City Resource Coordinator of Lander, Wyoming. "Our city is centrally located in an extremely scenic part of the state, offers quality local restaurants, a great shopping experience, and award-winning microbrews." Community, among Lander's glorious mountain views, is one of the key elements that makes this town all that it is.

Outdoor Adventure Haven

Run into Wild Iris Mountain Sports (or any other store for that matter!), and the employees will offer up need-to-know tips to get you up that challenging route, point out the best hiking and camping spots, and show you what you need to experience all this area has to offer. The same goes for any one of the town's delicious little foodie hot-spots. While Lander may be coined as a "climber's town", we argue that foodies from rivaling cities will be pleasantly surprised at what this town has to offer from a culinary standpoint. Gannett Grill is a must for anyone looking for a chill, laid-back atmosphere with a local, grass fed all-beef burger that will knock your socks off. You'll be hard pressed to leave this place without conversing with a local and subsequently making a new friend. Looking to start your day of adventure off right? Make your way to the Middle Fork for the best cup of French press coffee you've had in years and a decadent side of beignets (fried donuts). If you're traveling in the summertime, we recommend sitting out by the patio where you'll enjoy the fresh breeze and the peaceful sound of the creek right along the picket fence that encloses this delightful little area. After you've indulged, set out to do some exploring. After all, it is Lander, and all of this beauty is just waiting to be discovered.



Hike, bike, climb, run, walk, drive, ride, or wander. Whatever your fancy, just make sure you get outside. The Wind River Mountains are easily one of the most incredible sights in the entire state, but the vastness and remoteness of this range can be overwhelming. It's hard to decide where to go and what to do first! For some guidance, check out one of the area's local outfitters, or stop by Wind River Outdoor Company. Better yet, stay at a dude ranch nearby, like Allen's Diamond Four Ranch, where you'll get to go on a guided pack trip to drink in the area's majestic surroundings. Need an exciting excuse to get away and experience Lander

for real? The town has several annual events that bring out the charm and vibrancy of the Wind River Country. Climb with the pros at the International Climbers Festival, or drink in the city's local art at Lander Riverfest where original, handcrafted art is sold and entertainment, demonstrations, food, and live music are in plenty. What are you waiting for? Grab your backpack, hiking shoes, a tent, and your carefree spirit, and throw caution to the wind as you explore one of Wyoming's best kept secrets: Lander, Wyoming. We'll see you there!

Article adapted from Travel Wyoming:

<https://www.travelwyoming.com/article/lander-wyomings-outdoor-adventure-haven>



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Yellowstone in the Winter



A Winter Guide to Yellowstone

Something special happens to Yellowstone in the winter. The snowy forests take on a mystical silence, clouds of steam billow up gently around deserted hot springs, and an air of solitude permeates the pristine, snow-covered wonderland. Yellowstone, with its geothermal features, lakes, waterfalls and wildlife, is stunningly beautiful and peaceful when blanketed with crisp, white snow. To truly experience the serenity of the season, spend some time exploring Yellowstone's magnificent backcountry.

Getting There

The Yellowstone Regional Airport, two miles outside of Cody, is about 50 miles from the park's East Entrance. It offers service from Salt Lake City and Denver. Jackson Hole Airport, on the edge of Grand Teton National Park, is about 50 miles south of the park and offers service from Salt Lake City, Dallas/Fort Worth, Chicago, Atlanta and Denver. The Gallatin Field Airport in Bozeman, Montana, is about 90 miles from the park's north entrance, which is the only entrance open to car traffic in the winter. Car rentals and shuttle service to nearby towns and hotels are available at all of the airports.

Traveling in the Park

Cars are not allowed in the park after November 3, except on a limited stretch of road to Mammoth Hot Springs through the North Entrance. Roads begin to open again late April, weather permitting. Until then, visitors can enter the park through other entrances via scheduled snowcoaches or on foot, snowshoes or skis. There are several authorized snowmobile and snowcoach guides near Yellowstone.

Yellowstone in the Winter

Activities

Snowshoeing and cross-country skiing:

Both activities are great ways to experience Yellowstone's backcountry in the winter. There are miles of trails winding through the vast wilderness, and all are open for exploration on foot. There are several outfitters nearby who rent gear, and several companies specialize in guided trips if you'd rather not venture out alone.

Snowmobiling

An extension of the Continental Divide Snowmobile Trail, the trails of Yellowstone may be explored only with an authorized commercial guide or with a Non-Commercially Guided Snowmobile Access Program permit. Several hundred snowmobiles are allowed each day, but since it's such a popular spot, it's advisable to make advance reservations.

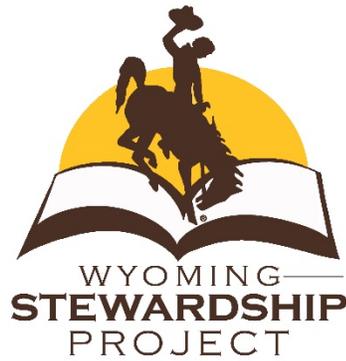
Lodging

Two lodges in Yellowstone are open during the winter season. The cozy Old Faithful Snow Lodge & Cabins is open from December 16, 2016 to February 27, 2017. The hotel offers equipment rentals, guides and tours. It fills up fast, so make reservations as early as possible. There are plenty of places to stay in the towns surrounding the park too, from ranches and cabins to vacation rentals and B&Bs.

Article reprinted from Travel Wyoming:

<https://www.travelwyoming.com/article/winter-guide-yellowstone>





Lesson Three: Wyoming Wildlife Management

Grade Level: 3rd Grade

Time: 45-60 minutes

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

Objective: Students will discuss the human impact on wildlife populations in Wyoming.

Purpose: Students learn that people who use and care for Wyoming's lands must be good stewards in order to help manage wildlife populations.

Required Materials/Resources:

- Poker chips or counters (3 per student)
- Chart paper
- Wildlife Population Simulation Game recording sheet (one copy for the teacher)
- Clipboard
- Elk Population of Wyoming graph (Source 1)
- Student journals
- "Yellowstone - Wildlife,"
<https://www.nps.gov/yell/learn/nature/wildlife.htm>
(Source 2)

Suggested Teacher Preparation:

- Using the "Yellowstone - Wildlife" website become familiar with the types of wildlife that are in Wyoming. Click on the different categories for examples of different species.
- Determine a space to play the game starting in step 3. Students will need a lot of room to move.

- Create anchor t-chart titled: Wyoming Wildlife and Challenges for Wyoming Wildlife.
- Decide which students will be which roles for each round of the game. Decide how many rounds you will play.
- Be able to display the Elk Population of Wyoming graph and the data you record on the Wildlife Population Simulation Game recording sheet for the class to see.
- Post statement starters from the Assessment step.

Standards:

Science: 3-LS4-3 (CCC), 3-LS4-4 (CCC,DCI) - (Practiced/Encountered)

Social Studies: SS5.4.1 (Explicit), SS5.5.4 (Practiced/Encountered)

ELA: 3.SL.1 (Practiced/Encountered)

Vocabulary:

- **Game Warden** - a person who cares for wildlife and makes sure that hunting and fishing laws are obeyed
- **Permit** - official permission to access land or use resources for a period of time

Instructional Procedure/Steps:

1. Have students play the game “Chips In” to see what Wyoming wildlife students already know. Give each student three chips. Say: **“In our previous lesson, we read about bighorn sheep and wildlife viewing in Wyoming. Using your chips, you will now brainstorm other examples of Wyoming wildlife. When you think of an example, place your chip in front of you, and I will call on you to share. When you are out of chips, you cannot share anymore unless I pass chips back. Questions?”** Allow students to share until all chips are gone. If students are only thinking of big game, remind students of other animals that are wildlife such as fish, birds, reptiles, etc. use examples from the Yellowstone Wildlife pages. As students share, record their ideas on the Wyoming Wildlife side of the anchor t-chart. Some possible examples include: *grizzly bear, black bear, wolf,*

TEACHER NOTE:

Chips In: Students are given a predetermined number of chips. When a student wants to participate, he/she puts in a chip on the table. When the student is out of chips, he/she is out of turns, unless the teacher gives a chip back. The strategy is meant to encourage equal participation among learners.

coyote, red fox, weasel, skunk, mountain goat, pronghorn, beaver, rabbit, gopher, bat, prairie dog, porcupine, chipmunk, squirrel, vole, eagle, red-tailed hawk, turkey vulture, owl, turtle, lizard, snake, horned lizard, toad, frog, etc.

2. Say: **“Remember, Wyoming is special because of how diverse our wildlife is here. Because of this diversity, tourists come from all over the world to look at or be involved with wildlife. People in Wyoming also enjoy doing outdoor activities where they can encounter or see wildlife like hunting, fishing, hiking, skiing, snowmobiling, camping, etc. These recreational activities are fun, but it is important to remember to be good stewards while participating in those activities.”**

3. This next activity is similar to Sharks and Minnows (a simple game of tag). The activity will focus on hunting and wildlife population management. The overarching goal is that students will come to understand that there is a relationship between humans and wildlife populations. This relationship can cause either a positive impact or a negative impact depending on whether it is handled responsibly. As good stewards, we want to make sure that we are managing wildlife responsibly on our public and private lands. Say: **“We will be playing a game that will represent one type of interaction between humans and wildlife. The object of the game is to get from one end of the area to the other end of the area without getting tagged by the person who is ‘it.’”** Remind students to be aware of their surroundings, and, depending on the space available, running may not be an option. In addition, tagging other students needs to be gentle. Make your guidelines clear of how students can be safe while playing. Any players who cannot abide by these guidelines will have to sit out of the activity.

TEACHER NOTE:
Consequences can be positive or negative. For instance, if a large elk population is reduced, the remaining elk may have more forage left for winter. This means they will be healthier than if the population was too large and did not have enough food. On the other hand, if there are too few elk, there will be less wildlife for everyone to enjoy.

4. How to play: Assign all students a role (elk, hunter, etc.). This will change for each round. The hunter students will start in the middle of the space available. The wildlife students will all begin on one end of the space. When the teacher says **“Go,”** wildlife students walk or run, depending on your space, to the other end of the area. Their goal is to not get tagged by the hunter student(s) in the middle. The hunter student(s) in the middle are trying to tag as many wildlife as they can before the wildlife get to the other side of the area. The teacher will be acting as a Game Warden to introduce the idea that there are jobs where people are stewards of Wyoming’s resources every day. At the end of each round, record the numbers of each group on the Wildlife Population Simulation Game recording sheet to show a direct relationship between population numbers and human impact. For the first three rounds, follow the instructions as written. Then as the rounds progress, alter the game as you see fit. Remember, the goal of the activity is to help students see the relationship between hunters and wildlife populations.

5. Round 1: Pick what kind of wildlife students will be. For instructional purposes, they will be called elk. Begin by assigning $\frac{1}{4}$ of your students to be wildlife. The rest of the students will not participate in this round. Have the elk line up on one side of the room. Before starting the round, say: **“I am the Game Warden. Game Wardens are stewards because one part of their job is to issue permits or tags to hunters to tell them how many elk they can hunt each year. For this round, we do not have any hunters. When I say ‘Go,’ all of the elk will try to get to the other side. Questions?”** Teacher says **“Go,”** and the elk move from one end of the space to the other. On the recording sheet, record the number of adult wildlife who made it to the other side ($\frac{1}{4}$ of the class), number of young wildlife (0), and number of hunter(s)(0).

6. Round 2: Before starting the second round, say: **“All of the elk from the first round had young ____ this spring. (calves for elk, fawns for deer or antelope) Choose one friend to join you as wildlife. As the Game Warden, I am not issuing any tags for hunters again this round.”** Teacher says **“Go,”** and the elk move from one end of the space to the other. On the recording sheet, record the number of adult wildlife who made it to the other side ($\frac{1}{4}$ of the class), number of young wildlife ($\frac{1}{4}$ of the class), and number of hunter(s)(0).
7. Round 3: Before starting the third round, say: **“As you can see, the wildlife population grows each year when young are born. If the wildlife population grows too much, there will not be enough space or food for all of them. When there is not enough food, wildlife and the plants in their habitat will not be healthy. To help maintain healthy wildlife and plant populations, Game Wardens issue hunting permit tags for a certain number of animals every year. For this round, we will use the same wildlife population as in Round 2.”** Have the wildlife from the previous round line up again. Assign two hunters with two “tags” each to stand in the middle. Say: **“For this round, we will have two hunters that each have two permit tags. When I say ‘Go’, all of the elk will try to get to the other side. The hunters can try and tag two adult elk each.”** Teacher says **“Go,”** and the elk move from one end of the space to the other. On the recording sheet, record the number of adult wildlife who made it to the other side ($\frac{1}{4}$ of the class minus up to 4), number of young wildlife ($\frac{1}{4}$ of the class), and number of hunter(s)(2).
8. Rounds 4 - ____: The set up for these rounds will be teacher’s choice: Repeat previous directions, allow each elk that makes it across to bring a young elk in to the next round, and alter the number of hunters and/or permit

TEACHER NOTE: A way to add complexity to the game in step 8 would be to add in other factors that contribute to changing wildlife populations. Wildlife could be given two babies, or before moving, the wildlife number could be adjusted by having them succumb to a disease. These changes would communicate the idea that there are other factors influencing wildlife populations.

tags the hunter(s) is/are given. Make sure to record numbers after each round on the recording sheet. Play until there is enough information on the recording sheet to show how hunters can help manage wildlife populations.

9. When the game is over, debrief with students using the recording sheet data. Display the recording sheet. Have students discuss what they notice about the data in regard to how people affect the wildlife populations. Some questions to ask during this time are:



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

-  **“What did you notice about the elk population when we had no hunters?”** *The elk population was very high and grew quickly.*
- **“What consequences might that have?”** *See teacher note discussing consequences and take any logical responses.*
-  **“What happened when we had more hunters?”** *The elk population diminished or stayed the same because of the young elk added each round.*
- **“What might be the consequences of that?”** *See teacher note discussing consequences and take any logical responses.*
-  **“How was the game warden important to the process of managing the population?”** *The game warden helps ensure that there are not too many or too few wildlife.*



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

10. Say: **“Now we are going to take a look at a graph that shows the elk population over the course of several years.”** Display the bar graph on a document camera or smartboard, so it is visible to all students. Give students time to view the graph and have them share with a partner what they notice about the graph. After students

have shared, ask the following discussion questions:

- **“What do you notice about the population from 2012 to 2013? Why do you think the population decreased? What may have caused the population to decrease?”**
- **“From 2010 to 2011 there was a population increase, what may have caused the population increase?”**
- **“How might these changes in population have impacted the way that the game wardens managed the number of hunting licenses issued each year?”**

11. Say: **“Although our focus today was discussing how hunting can impact wildlife populations, there are other factors that impact wildlife populations as well. What do you think are some challenges that could impact wildlife populations on Wyoming’s lands?”**

Have students share their ideas and record them on the Challenges for Wyoming Wildlife side of the anchor t-chart. Some possible ideas include: *competition with other wildlife, disease, lack of food in winter, tourists’ lack of education and interference, weather (drought, extreme cold, extreme snowfall), predators, etc.*

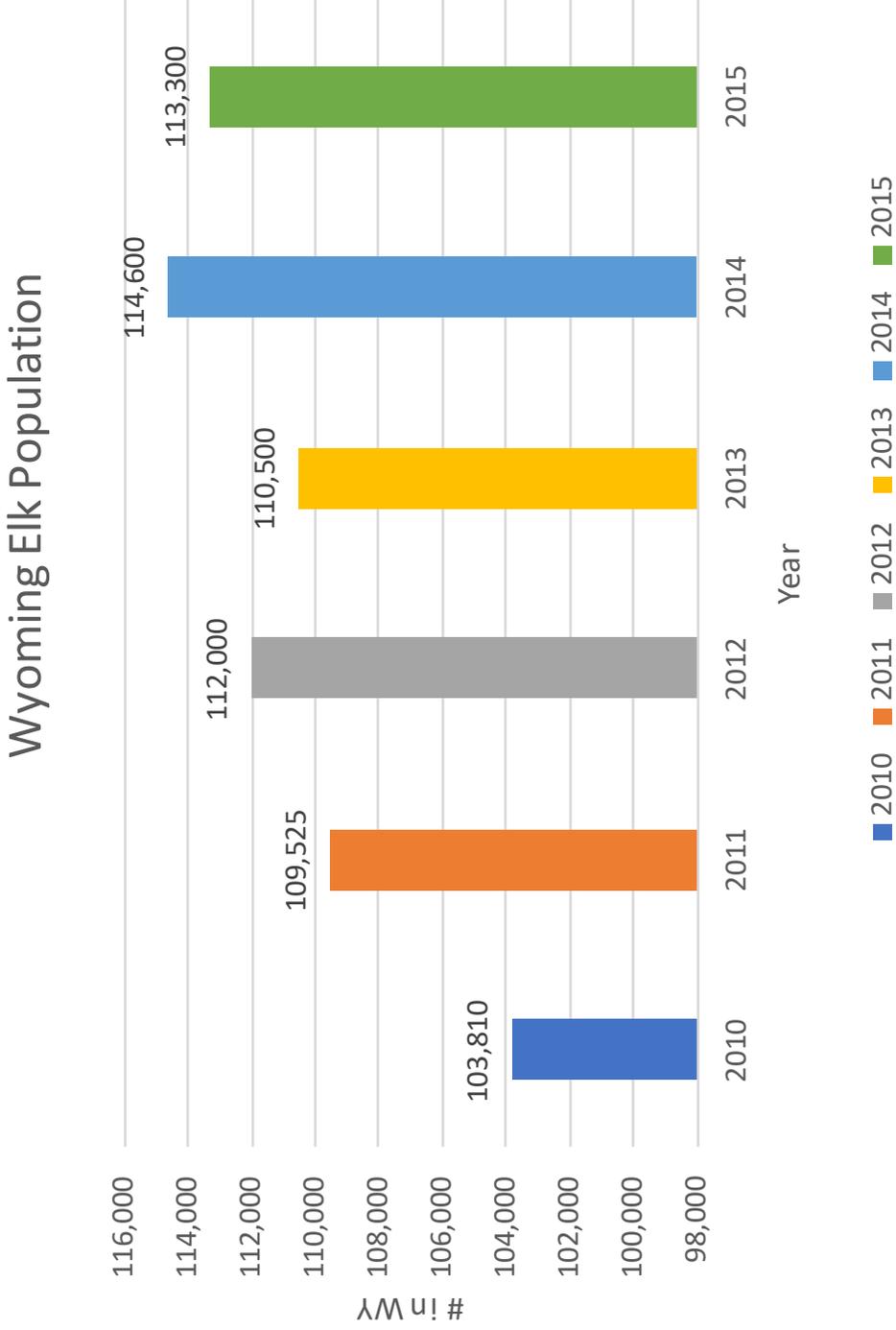
Assessment: Pass out student journals. In their journals, have students complete the posted sentence starters below. Collect journals when all students are finished, and review responses to check students’ understanding of the lesson’s concepts.

- **One thing I learned about human and wildlife relationships is...**
- **Humans can have a negative impact on wildlife when...**
- **Humans can have a positive impact on wildlife when...**

Credits/Sources:

1. Wyoming Game and Fish. (2010-2016). *Wyoming Game and Fish Annual Reports: Elk Populations*
2. National Park Service. (2019, September 10). *Yellowstone – Wildlife*. Retrieved October 12, 2020, from <https://www.nps.gov/yell/learn/nature/wildlife.htm>

Elk Population of Wyoming



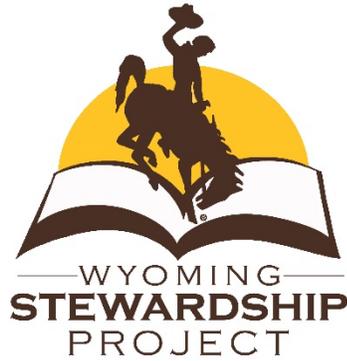
*Elk population numbers can be found in the Wyoming Game and Fish Annual Reports, years 2010-2016.



Wildlife Population Simulation Game

Round #	Adult Wildlife	+	Young Wildlife	-	Hunting Permits	=	Total Wildlife
1		+		-		=	
2		+		-		=	
3		+		-		=	
4		+		-		=	
5		+		-		=	
6		+		-		=	
7		+		-		=	
8		+		-		=	
9		+		-		=	
10		+		-		=	





Lesson Four: Weeds Invade!

Grade Level: 3rd Grade

Time: 45-60 minutes

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

Objective: Students will discuss the relationships of humans, plants, and animals in Wyoming.

Purpose: Students learn that maintaining the relationships of humans, plants, and animals requires the people who use or care for Wyoming's lands to be good stewards.

Required Materials/Resources:

- Wyoming Weed and Pest Overview (Source 1)
- What Can You Do <https://wyoweed.org/resources/what-can-you-do/> (Source 2)
- State Designated Noxious Weeds <https://wyoweed.org/noxious-species/listed-species/state-designated-noxious-weeds/> (Source 3)
- Yellow and green paper (one yellow and two green pieces per student)
- Scissors for teacher
- Weeds Invade! Scenarios sheet (one per group)
- Weeds Invade! Scenario chart (one per student and one per group)
- White paper (one piece per student)

Suggested Teacher Preparation:

TEACHER NOTE: As a possible extension to the activity, display the list of State Designated Weeds (Source 3), so students can begin to identify weeds around them.

- Review the Wyoming's Defense Against Invasive Species, What Can You Do, and State Designated Noxious Weeds websites (Sources 1-3) to familiarize yourself with Wyoming's invasive noxious weeds.
- Print the Wyoming Weed and Pest Overview (Source 1)
- Cut colored paper into pieces before the activity begins. Be sure to have two green pieces for each yellow piece.
- Break students into small groups.
- Cut apart each group's scenario sheet into individual scenarios and assign a different scenario to each group member.

Standards:

Science: 3-LS4-4, 3-5-ETS1-2 (DCI, SEP) - (Practiced/Encountered)

Social Studies: SS5.5.4 (Explicit)

ELA: 3.SL.1, 3.SL.4 (Practiced/Encountered)

Vocabulary:

- **Invasive** - growing and dispersing easily, usually to the detriment of native species and ecosystems
- **Native** - (1) a person born in a specific place or associated with a place by birth, whether subsequently a resident there or not (2) found originally in a place, not introduced from another place
- **Noxious Weed** - plant that has been introduced, accidentally or intentionally, into an environment and causes or is likely to cause environmental or economic harm; plants that have been declared by a legislative body as worthy of regulation and management

Instructional Procedure/Steps:

1. Say: **"In our previous lesson, we studied the relationship between humans and wildlife. However, there are also other challenges that are present with people, plants, and wildlife in Wyoming. Today, we are going to explore how plants can impact wildlife**

and how humans can impact plants.”

2. Scatter several pieces of yellow and green paper on the floor. Say: **“In this activity, you will all be wildlife. The paper will represent your food. When I say go, collect the food.”** Be intentionally vague here. Some students will get more paper than others; some will get a mixture of the different colors; some may choose to get all the same color, etc. Have students collect the food.

3. When all the paper is gathered up, have students return to their desks with the paper that they collected. Say: **“Raise your hand if you have any pieces of green paper. The green paper represents native plants that the wildlife was eating. If you have green paper, put it back on the floor.”** Allow students to return green paper to the floor. Say: **“Raise your hand if you have any pieces of yellow paper. The yellow paper is a noxious weed. A noxious weed is a plant that has been introduced, accidentally or intentionally, into an environment and causes or is likely to cause environmental harm. What this means is that an animal who eats this plant is going to help that plant spread. Anyone who has yellow paper should tear that paper in half before putting it back on the floor.”** Have students return the yellow pieces of paper. Ask: **“What do you notice about the pieces of paper/plants?”** *Students should notice that there are now as many “noxious weeds” as there are “native plants.”* Say: **“Noxious weeds use the same resources (light, soil, water) that native plants do, so now the native plants have to compete for those resources with the noxious weeds.”**

4. Say: **“We are going to do the activity again. This time you will be wildlife that won’t eat noxious weeds because they taste yucky. The green paper represents your food, and the yellow paper is noxious weeds.”**

When I say go, collect your food.” Have students gather the green paper until it is all picked up.

5. When all the green paper is gathered up, have students return to their desks with the paper that they collected. Say: **“Now the only plants left on the floor are noxious weeds. Because you ate the native plants, the noxious weeds were left behind to multiply and spread. When the native plants are replaced with noxious weeds, the wildlife will not have as much food to eat.”**

6. Ask: **“Did you know that wildlife could help plants spread?”** When students reply, “No,” say: **“You only saw the paper as food; wildlife does the same thing. This is why people such as Weed and Pest Control employees have jobs where they are responsible for identifying and containing invasive species. We are proud of the plants, animals, and activities here in Wyoming. It is important that we are good stewards to keep our wildlife, plants, and recreational areas as healthy as we can. We want to make sure that Wyoming citizens and tourists alike can continue to enjoy our state. If humans aren’t practicing good stewardship, many noxious weeds have the potential to take over the environment of the native species and wildlife that depend on them for food, shelter, and habitat.”** Display the Wyoming Weed and Pest Overview (Source 1) and read aloud as students follow along. When finished reading the quote, say: **“You might ask, why should I care? Why is it important to solve this problem? Noxious weeds are a big problem on private and public lands in Wyoming for several reasons. If we don’t do anything, these weeds will limit many uses on our lands now and for future generations. Noxious weed species harm our water systems, wildlife habitats, agriculture, and recreation areas.”**

7. Say: **“Although noxious weeds are one serious challenge that plants, animals, and humans face, there are several other problems as well.”** Ask students the questions below, and allow them to respond before moving on to the next step in the lesson:

-  **“What are other plant and human relationships/challenges that you are aware of?”**
- **“How might the challenge(s) you mentioned be solved?”** Examples might include: *pollution, people who are there for recreation not cleaning up garbage, people introducing noxious weeds as ornamentals, etc.* When students are finished sharing, say **“It is everyone’s job to be good stewards of our plants, wildlife, and recreational lands.”**

8.  Divide students into groups. Students will read scenarios and determine whether or not the character in the scenario is displaying good stewardship and if the character’s action will hurt or help the public land/environment. Pass out the Weeds Invade! Scenario charts and the Weeds Invade! Scenarios to each group. Make sure every member of the group has a different scenario. Using their own scenarios, students will individually fill out their own chart by writing if their scenario is helpful or harmful to the land and what evidence they used to make their decision. When each member is finished, groups will collaborate and complete a group chart for all of the scenarios.
9. Once groups have completed their charts, do a quick check using thumbs up, thumbs down. Read each scenario, and have students give a thumbs up if they think that the character displayed good stewardship and is helping the land, or a thumbs down if they think the



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



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

character could have displayed better stewardship and was harming the land. When finished, collect the groups' final scenario charts.

Assessment: After students participate in the thumbs up, thumbs down activity, pass out white paper, have groups choose one of the harming scenarios (scenarios 4-6), and have each student individually create a solution to the scenario. When all students are finished, have groups compare solutions to decide which will best fix the problem in the scenario. Collect papers after all students share, and the group makes a decision. Evaluate students' solutions on if they correctly address the problem and group charts if they have identified the scenarios correctly.

Credits/Sources:

1. Wyoming Weed and Pest Council. (n.d.). *Wyoming's Defense Against Invasive Species*. Retrieved September 12, 2018, from <https://wyoweed.org/>
2. Wyoming Weed and Pest Council. (n.d.). *What Can You Do*. Retrieved September 12, 2018, from <https://wyoweed.org/resources/what-can-you-do/>
3. Wyoming Weed and Pest Council. (2018) *State Designated Noxious Weeds*. Retrieved September 12, 2018, from <https://wyoweed.org/noxious-species/listed-species/state-designated-noxious-weeds/>

Weeds Invade!

Scenario Chart

Scenario #	Helping or Harming	How do you know?



Weeds Invade! Scenarios

Scenario 1:

Park Ranger Steve notices that some hikers have strayed from the trail. He finds the hikers and explains to them that when they are not on the trail, they could be harming native plants or disturbing the homes of wildlife. The ranger explains that trails are marked so that the plants and wildlife's homes can stay safe. The hikers apologize and make sure to stick to the trails for the remainder of their hike.

Scenario 2:

Abby is camping in the mountains of Wyoming. She loves to look at the variety of plants that she finds. Abby stumbles upon a plant that she has never seen before. It looks like a beautiful flower. The plant looks so interesting; Abby wants to pick the plant and take it home with her. Abby then remembers that sometimes noxious weeds can look like flowers. She knows how invasive and harmful noxious weeds can be. Abby does not know if this plant is a flower or a weed. She decides that she will leave the plant where it is, but she will take a picture so that she can remember what it looks like. She does not want risk spreading a noxious weed.

Scenario 3:

Bob overhears two people talking about how they want to hunt a moose this year. Bob knows that the hunting season is over for the year. Bob decides to call the game warden to warn that people may be hunting moose without permission.

Scenario 4:

Joe was hiking in the forest. He decided that he really liked a flower growing near one of the trees he walked by. He decided to pick the flower and take it back to his campsite. When he got back to his campsite, his wife asked him to go pick more flowers because she really liked the flowers, too.



Weeds Invade! Scenarios

Scenario 5:

Suzy went on a trip to Yellowstone National Park. She was very excited because she had never been to Yellowstone. Suzy thought she might see animals when she got to the park. She wasn't disappointed. Suzy saw several animals and decided to pet a baby bison.

Scenario 6:

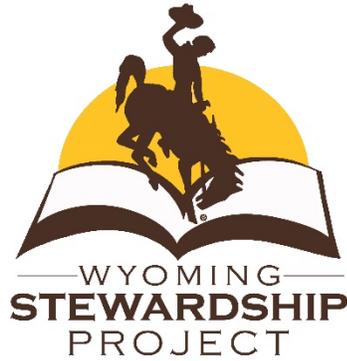
Sam went hiking with friends. While they were hiking, they decided they were hungry. After eating their snacks, they forgot to pick up their trash and continued on their hike.



Wyoming Weed and Pest Overview

“Wyoming Weed and Pest Council has been working to eradicate invasive species since 1973. You can help keep our state natural and safe from destructive weeds and pests. The rich varieties of habitats found throughout the state are treasured by residents and visitors alike. Hunting, fishing, recreation, tourism, mining, and agriculture are integral to our livelihood. All of us depend on healthy livestock, soils and wildlife which require healthy native plant communities. These native communities are threatened by invasive noxious weeds and pests and if left unchecked could transform an entire ecosystem and everything that depends on it. Future generations are counting on us to protect and preserve our natural resources.”





Lesson Five: Careers in Stewardship

Grade Level: 3rd Grade

Time: 2 Days - Day 1: 30-45 minutes; Day 2: 30-45 minutes

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

Objectives: Students will:

- Describe one of three occupations: Weed & Pest (Ecologist), Game & Fish (Game Warden), and Parks & Recreation (Park Ranger) involved in land use and maintenance.
- Explain how being a good steward impacts the culture of Wyoming.

Purpose: Students learn that people in a variety of careers demonstrate stewardship while using and caring for Wyoming lands.

Required Materials/Resources:

- Careers in Stewardship: Game Warden (one per assigned student) (Source 1)
- Careers in Stewardship: Park Ranger (one per assigned student) (Source 2)
- Careers in Stewardship: Ecologist (one per assigned student) (Source 3)
- Wyoming Agriculture in the Classroom website <https://wyaitc.org/curriculum/student-resources/> (Source 7) - Students can access the three texts listed above at this link.
- Careers in Stewardship graphic organizer (one per student)

TEACHER NOTE:

This lesson provides the opportunity to bring in a guest speaker from your local Game & Fish office (Game Warden), Weed & Pest office (Ecologist), and Parks & Recreation office (Park Ranger) into the classroom to provide information for students as they are researching. See Sources 4-6 for contact information.

- Brochure template (either accessed electronically or one per student) Directions are in italics. If students are making paper copies of the brochures, give them one copy of the brochure with directions and clean copies to create their brochures.
- Student journals
- Pencils
- Markers
- Crayons

Suggested Teacher Preparation:

- Familiarize yourself with the career websites.
- Decide which pairs of students will be researching each career.
- Decide whether students will access digital or print copies of the texts and prepare materials accordingly.
- Decide whether students will complete the brochure digitally or on paper.
- Place students into groups of three for the presentations. Each group must have a student who researched each occupation. (If you need to make a group of more than three, have students who researched the same occupation share out their knowledge together.)

Standards:

Social Studies: SS5.6.1, SS5.6.3 (Explicit)

SS5.1.1 (Practiced/Encountered)

ELA: 3.RI.1, 3.RI.7, 3.W.7, 3.SL.1, 3.SL.4 (Practiced/Encountered)

CVE: CV5.1.1, CV5.3.1 (Explicit), CV5.2.2, CV5.4.1

(Practiced/Encountered)

Vocabulary:

- **Ecologist** - a person who studies how animals and plants interact in an environment
- **Game warden** - a person who cares for wildlife and makes sure that hunting and fishing laws are obeyed
- **Park Ranger** - a person in charge of managing/caring for a park

Instructional Procedure/Steps:

Day 1:

1. Say: **“In this lesson, we will be researching some occupations in Wyoming that have the opportunities to be stewards each day. There are many other careers that practice stewardship, but today we are only going to focus on three main jobs: game warden, park ranger, and ecologist. Since we have been focusing on wildlife, plants, and recreation, we have chosen an occupation to look at in each of these areas.”** It may be beneficial to share a few other occupations available such as conservationist, biologist, agronomist, statistician, population scientist, etc. This will highlight again that protecting Wyoming’s lands cannot be done with only one person or group, but it takes a collection of people who have the same goal (stewardship) to take care of our land.
2. Place students into groups of two and assign each pair a career they will research together. Students will learn about the other two careers they do not research during presentations later on in the lesson.
3. Pass out the Careers in Stewardship graphic organizers. Either pass out paper copies of assigned texts or set students up to read their assigned texts electronically. Students read their assigned texts and answer the questions on their graphic organizers.
4.  When students have completed their organizers, say: **“Wyoming is always looking for people to seek ways to be good stewards. We will be creating brochures to advertise the careers we just researched in order to try to help people understand why these jobs (and others like them) are important!”** If students are making their brochures on paper, pass out the templates,



In this task, students will be engaged in the higher order thinking skill of analyzing by identifying and organizing ideas about careers.

and have students fold it into thirds to create the brochure. If students are completing them digitally, allow students to access the template. Students use information from their graphic organizers to complete their brochures. Have students complete content first then decorate the brochures if there is time. Collect the graphic organizers and brochures, so students may present them tomorrow. For assessment purposes, check that the information in both the graphic organizers and brochures is correct. *The graphic organizer should include information about how the career practices good stewardship. The brochure should include at least two pieces of information from the graphic organizer about what the job entails.*

Day 2:

1. Students will present their brochures in groups of three. Assign groups so that there is one expert on each of the careers in each group. If you need to make a group of more than three, have students who researched the same occupation share out their knowledge together.
2. Have groups present their brochures. When all groups have finished presenting, say: **“Remember, it takes many people working together to display good stewardship. This task could not be done by one person or group alone. It takes many careers, volunteers, and people who care. As Wyoming citizens, we are responsible to help in this effort along with other people and organizations to be good stewards of the land and its resources.”**

Assessment: Pass out student journals. Have students write a summary sentence about what they learned from each of the members of their groups. Students write two sentences in their journals relating to each career. Sentences should name the occupation, explain why the occupation is important to Wyoming, and state how that person practices good

stewardship. When students are finished, collect student journals and check for accuracy of sentences. (See also Day 1-step 4 for the lesson's other assessment opportunity.)

Credits/Sources:

1. Wyoming Game and Fish Department. (2017). *Field Operations*. Retrieved November 28, 2017, from <https://wgfd.wyo.gov/law-enforcement/field-operations>
2. XYZ Media, Inc Gamewarden.org. (2017). *Becoming a Park Ranger*. Retrieved August 13, 2017, from <http://www.gamewarden.org/career/park-ranger>
3. XYZ Media, Inc Gamewarden.org. (2017). *Becoming an Ecologist*. Retrieved August 13, 2017, from <http://www.gamewarden.org/career/ecologist>
4. Wyoming Game & Fish Department. (2011-2017). *Regional Offices*. Retrieved August 13, 2017, from <https://wgfd.wyo.gov/regional-offices>
5. Wyoming State Parks. (2018). *State Parks, Historic Sites & Trails*. Retrieved July 18, 2018 from <http://wyoparks.state.wy.us/index.php/learn/contact>
6. Wyoming Weed and Pest Council. (n.d.). *District Offices*. Retrieved August 13, 2017, from <http://www.wyoweed.org/about/district-offices#Table>
7. Wyoming Agriculture in the Classroom. (2018) *Student Resources: 3rd Grade Outdoor Recreation & Tourism*. <https://wyaitc.org/curriculum/student-resources/>

Careers in Stewardship

Game Warden

The Life of a Wyoming Game Warden is...

- A 24-hour-a-day job
- A full-time responsibility
- “The greatest job in the world,” says North Pinedale Game Warden Bubba Haley.

Though wardens in many states spend the bulk of their time on law enforcement, Wyoming’s wardens have many responsibilities, as you’ll note below.

Part of the job’s attraction is never quite knowing what the day will hold-whether trapping bears, darting and transplanting moose, flying in a helicopter to count bighorn sheep, getting a deer out of a resident’s backyard, hazing 1,000 elk out of a rancher’s field, talking to hunters, or catching poachers. They are wildlife biologists, wildlife law enforcement officers, wildlife educators, problem solvers, and ambassadors to landowners, hunters, anglers and communities throughout Wyoming. Wardens are considered the local “expert” when constituents want to find out what’s going on with their wildlife and their department. Additional information is available on the Wyoming Game Wardens Association’s website.

Wildlife Management/Data Collection & Analysis

Collect/summarize wildlife data, from both ground and air, to determine distribution, abundance, recruitment, hunter harvest, and mortality causes of wildlife. Work with wildlife biologists and neighboring game wardens on hunting season strategies and recommendations. Sample wildlife for research and disease surveillance.



Enforcement of Game and Fish Laws and Regulations

Enforce/check compliance with hunting, fishing, trapping and watercraft statutes and regulations as well as littering and state land camping, open fires, and closed/off road travel restrictions. Write enforcement reports, attend court, work with other enforcement agencies, conduct investigations, and collect intelligence. Carry and maintain law enforcement weapons and gear.



Careers in Stewardship

Game Warden

Injured and Nuisance Wildlife

Respond to and appropriately handle injured and nuisance wildlife calls which may require euthanization of wildlife. Utilize immobilization or lethal techniques based upon evaluation of circumstances.

Watercraft Safety

Conduct watercraft safety and registration inspections along with HIN, VIN, and AIS inspections. Enforce/check compliance with watercraft statutes and regulations. Educate public regarding watercraft safety.

Wildlife Damage/Conflicts

Evaluate damage to crops and livestock by wildlife, including investigations, data collection, and delivering damage materials to mitigate conflict.



Public and Agency Contacts and Communication

Act as the local liaison between the WGFD and the public. On a daily basis, develop and maintain effective working relationships and communication/coordination with WGFD employees. Make regular public contacts, both in the field and office setting, with landowners, sportsmen, boaters, public-at-large, conservation groups, government agencies and non-government organizations. Provide information and education on various wildlife topics and boating safety as well as the wide variety of other WGFD issues. Develop and present structured educational and information programs related to watercraft safety and hunter education.



Careers in Stewardship

Game Warden

Training

Participate in law enforcement (including firearms and intermediate weapons), wildlife management, wildlife conflict resolution/damage, injured wildlife, immobilization of wildlife, equipment (motorized and non-motorized), working with the public and other training as assigned or deemed necessary. Required to attend and successfully complete/pass the Wyoming Law Enforcement Academy Peace Officer basic and annual training.



**Adapted from <https://wgfd.wyo.gov/law-enforcement/field-operations>*

Careers in Stewardship

Park Ranger

What is a Park Ranger?

For many, the term “park ranger” evokes the image of an officer working in nature amongst grizzly bears, elk, and other wildlife. While this characterization is accurate, it only paints part of the overall picture. Park rangers do much more than just observe, track and protect wildlife. A park ranger is responsible for a broad range of duties- similar to that of a fish and game warden, conservation officer, or wildlife resource manager, but within the defined area of a state or national park.

Park rangers are considered peace officers, which means they are authorized to carry a weapon and make arrests. A park ranger’s primary duty is to protect parks from those who would do damage to them, to enforce recreational, hunting, and environmental regulations, and to protect visitors in the park from wildlife and other dangers.

Park Ranger Job Description- Major Job Duties

A park ranger may perform a number of different duties. Some of these duties vary depending on where the park ranger works, while others vary from position to position. Those who work for the federal government are often more focused on the law enforcement side of being a park ranger, while those who work in state parks may focus more on wildlife and on public relations. Here are some common duties that many park rangers have:

- **Enforcing Park Regulations and Laws** – Park rangers have a duty to uphold and enforce all laws—even those that do not pertain to parks. However, they usually only enforce park regulations unless they come across an illegal activity in a park. They do carry firearms and are trained to defend themselves.
- **Write Citations, Issue fines, and Make Arrests** – Likewise, park rangers are empowered to write fines, confiscate hunting/fishing licenses, and make arrests whenever the situation calls for it.
- **Investigate Criminal Cases** – Federal park rangers may train to be special agents. These agents work for the U.S. National Park Service and conduct investigations into criminal activity that takes place in national or state parks.
- **Collect Evidence and Provide Testimony** – When a park ranger makes an arrest, they often have to appear in court to provide testimony. They are also in charge of collecting any evidence at the crime scene and are trained in how to do so without contaminating the evidence.
- **Assist Park Visitors** – Park rangers provide information, directions, and help to those who are visiting the park. This includes assisting them with camping activities (in parks where camping is allowed) and more. Park rangers are expected to be knowledgeable about the park they are assigned to.
- **Provide Education** – Park rangers may work in the visitor’s center and help educate guests on the environment, tell them about the park, and more. Rangers may also go to local schools or other organization meets and do presentations on local wildlife, conservation methods, and nature.

Careers in Stewardship

Park Ranger

- **Patrol the Park** – Rangers often spend time outdoors patrolling. These rangers are looking for litter, illegal hunting, wounded animals, lost children, and hurt visitors. They may need to provide emergency first aid when needed.
- **Search and Rescue** – If someone is lost in the park, park rangers are often the first to respond. They will work with other law enforcement as necessary to make certain the lost person is found.
- **Evacuating and Closing the Park** – Park rangers are charged with finding everyone in the park and getting them to safety in the event of a forest fire, tornado, flooding, or other natural disaster.
- **Administration** – Those who work in the visitor’s center may also handle daily administrative tasks, work as a dispatcher for other rangers, and perform other tasks as needed.

Park rangers often have tasks that change with the seasons. In the spring, for example, they may inspect trails and prepare campsites, while in the fall, they may cut back plants or prepare buildings and areas for the winter.

Typical Work Settings for Park Rangers

Park rangers, as one would guess, work primarily in a state or national park. However, they may also work in private parks. Those who do will find that their duties are very similar to park rangers who work for the state or federal government. Park rangers who have become special agents may travel across the country, while other federal park rangers may travel throughout a region. Others work in a single national park, much like how state park rangers work in a single park.

Working Conditions

Park rangers may often work outdoors and on their own. They may work in the freezing cold and in extreme heat, plus they may be asked to go out during snowstorms and thunderstorms to check on visitors or to bring them to a shelter. During a major natural disaster, park rangers are the last people out of the park after they have made certain that everyone is safely out of the area.

Some duties will take the park ranger indoors. Working in the visitor’s center, giving educational presentations, or testifying in court will all require park rangers to work indoors.

Education and Experience Requirements for Park Rangers

The educational requirements for working as a park ranger depend on what type of position you want. If you’re applying for a state position, you may find that all you need is an associate’s degree if you want to primarily work in the visitor’s center or give guides. However, if you want to serve as a full law enforcement park ranger, you may need a bachelor’s degree. If you want to work for the National Park Service, especially if you want to become a special agent, a bachelor’s degree is a necessity.

But what do you need to study? There are many different fields you can go into. Generally,

Careers in Stewardship

Park Ranger

you want to study something that is connected to the duties of a park ranger. Studying biology, wildlife conservation, botany, earth science, criminal justice, public administration, archaeology, and anthropology can all be good options. It all depends on what type of park ranger you want to be. Again, those who want to join the National Park Service may want to focus on criminal justice since national park rangers often do more law enforcement work.

State park positions are often arranged on tiers. The lower tiers may require only an associate's degree. These bottom level park rangers often perform only basic duties. Those who have experience in law enforcement may be able to substitute that experience for education. Those with a four-year degree can come in at a higher level. One advantage of this is that those with associate's degrees can begin gaining experience while they work on their bachelor's.

Supervisory positions often require a master's degree or years of experience.

Examination, Entrance and Training Requirements

In order to become a park ranger, you may have to pass a written and/or oral exam. The exam varies from state to state, but in most, it involves showing that you can communicate effectively, that you understand many of the basic duties of a park ranger, and that you can demonstrate basic problem-solving skills. You may also need to pass a physical exam that includes vision and hearing tests, plus a stamina requirement—some departments require their park rangers to be able to run a mile in a certain amount of time or to swim a certain distance.

Once a park ranger has been hired, they will go through training. This training course varies from state to state. The training a park ranger receives also depends on the job they will do. Those who will provide law enforcement will need to be trained on how to enforce laws and will have to go through a gun safety course. Those who will mostly serve as guides or work in the visitor's center may be trained in the areas of record keeping and public relations. Most park rangers will go through a basic first aid and CPR course.

In some areas, park rangers will also be trained in how to drive ATVs, boats, planes, or snowmobiles.

Those who get hired by the National Park Service will receive training at one of three different training courses. They may also need to complete the Seasonal Law Enforcement Training Program.



**Adapted from <https://www.gamewarden.org/career/park-ranger>*

Careers in Stewardship

Ecologist

What is an Ecologist?

The term “ecologist” is a fairly broad title that can be used by a number of people. Ecologists work in a number of different areas and may study a wide variety of different topics—anything connected to ecology falls under the purview of ecologists. People who consider this career may find themselves working in a lab, doing field research, working with engineers, and much more.

On the most basic level, ecologists study nature, wildlife, flora, any organism that lives within nature, and how they interact with each other and their environments. Most ecologists work behind the scenes in laboratories and other areas. They do a lot of research, gather data, perform analysis, and write environmental impact studies. Some work closely with companies to help them develop green technology and processes, while others study how the introduction of other species of plant or animal would impact an area. Some work for the government in advisory positions.

Ecologist Jobs & Job Description - Major Duties

The duties of an ecologist greatly vary depending on what the ecologist is assigned to do. Ecologists work in many different places, so what is a common duty of one ecologist may be something another ecologist never does. Here are some of the most common tasks an ecologist may be called upon to do:

- **Create Environmental Impact Studies** – Ecologists who work for companies, the government, and anyone who is going to build new buildings or alter existing ones will need to have an environmental impact study done. These studies look at how the proposed changes to the environment will impact the plants and animals that make it their home. These studies may also be done when the population suddenly increases or decreases or when a new plant or animal is introduced to a new environment.
- **Work to Create Green Practices** – Some ecologists do research into more environmentally friendly production methods. They may test how a new chemical affects plants, for example, or experiment with new types of plastics.
- **Provide Educational Programs** – Ecologists may teach workshops at universities or may lecture in schools, universities, and community programs. Those who have gone on to receive a doctorate may even teach full time.
- **Help Restore Natural Habitats** – Natural sites, for many reasons, may require human intervention before they can support wildlife. Ecologists will create and implement recovery plans for these areas.
- **Write Scientific Research Papers** – Those who do not want to work outdoors may instead focus on research and the study of wildlife and ecology. These ecologists will often seek grants to research particular species or areas of the earth with an eye towards learning more about that species or place. They may have this research published in various journals or present it at conferences.
- **Create Computer Models** – Ecologists with computer programming expertise may create models that predict how an area will be affected by different events.

Careers in Stewardship

Ecologist

- **Perform Surveys and Other Fieldwork** – Ecologists who do enjoy getting outdoors can do fieldwork. They will survey areas, record information about the wildlife, plants, and the environment, and more. This may involve capturing, tagging, and releasing animals or returning to check on certain plants on a regular basis. Following this research, the same ecologist may analyze the data, or it may be handed off to someone else.
- **Advise Groups on Environmental Issues and Law** – Ecologists may advise government officials, CEOs, and other leaders on environmental law.
- **Manage Wildlife Conservation Lands** – Ecologists who rise to supervisory positions may be placed in charge of wildlife conservation lands, meadows, woodlands, and other environments.
- **Create Project Budgets** – In many cases, the ecologist will need to create and submit budgets for various research studies, educational programs, and other activities.

Where Do Ecologists Work?

Because there are so many different duties ecologists can take on, there's no single work environment. Some do work outdoors collecting samples, tracking animals, and gathering data. Others may be outdoors while analyzing an area for an environmental impact study or while working to restore an area.

However, there are plenty of ecologists who spend their entire day indoors. These include those who do data analysis and research for scientific journals or for reports to various organizations. Some may work at the computer all day, while others may meet with business, community, state, and even national leaders to discuss ecology, answer questions about nature conservation, and lobby for new protective regulations.

Work Conditions

When working outdoors, ecologists may have to deal with the occasional unexpected storm. Unlike game wardens and other law enforcement officers, most ecologists do not work outdoors if it looks like there will be bad weather. Some may have to work in freezing temperatures or in very hot temperatures depending on what area or wildlife they are studying.

Some ecologists may also have to work up close with animals. While these animals may be tranquilized, some may not, and ecologists may get scratched or bitten. Even those who are only studying the environment may be unexpectedly attacked by an animal if it's disturbed.

Ecologists who work indoors may find themselves on the computer most of the day. Others may be in meetings with various people. In the case of ecologists who lobby, they may have to move from office to office while meeting with various high profile people.

Ecologists usually only work a standard 40-hour week. Most do not need to work evenings, weekends, holidays, or any overtime. Some jobs do include travel.

Careers in Stewardship

Ecologist

Education and Experience Requirements

To become an ecologist, you will need to hold a bachelor's degree in a job related to ecology. Degrees that provide a good basis for ecology include biology, zoology, marine biology, environmental science, wildlife conservation, botany, or another related field. Ecologists may need to study math, statistics, computer programming, chemistry, geology, meteorology, sociology, oceanography, and other related areas. It all depends on what area of ecology you want to focus on.

Some ecologists, especially those who do in-depth research or serve as consultants, may need to hold a master's degree in an area such as biology or environmental science. To teach at a university, a doctoral degree is usually required.

No previous experience is necessary to become an ecologist. Those who want to be ecologists often have a love of nature or of animals. They may enjoy working outdoors or solving puzzles through research and trial and error.



**Adapted from <https://www.gamewarden.org/career/ecologist>*

Careers in Stewardship

1. How does a _____ manage and care for the land?

2. How does a _____ impact Wyoming's culture? (help keep it unique)

5. How has the _____ job changed over time? How might it change in the future?

4. What are some problems a _____ faces in his/her career?

3. What would happen if _____ went away?



Insert or draw photo above.

Insert one fact from your graphic organizer below.

Managing and Caring for Public Lands

A _____ manages and cares for public lands by:

Fact One continued...

_____ helps keep Wyoming's culture unique by:

Insert a second fact from Graphic Organizer below.

Insert Career name and visual aid.

Managing Public Lands

Insert information on how this career contributes to land management.

Impact on Culture

Insert information on how the career affects culture.

Changing Over Time

Explain how the career has changed in recent years.

Problems and Challenges

Insert information about challenges for the career.

Absence

Insert information about what could happen if this career no longer existed.



Lesson Six: Engineering Solutions to Real-World Problems

Grade Level: 3rd Grade

Time: 3 Days - Day 1: 30-35 minutes; Day 2: 40-45 minutes; Day 3: 40-45 minutes

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

Objectives: Students will:

- Explain how they can be stewards of Wyoming lands by solving a problem that will benefit current and future generations.
- Identify and explain how they can demonstrate stewardship by solving real world problems.

Purpose: Students recognize that the use of Wyoming lands requires people to be good stewards.

Required Materials/Resources:

- Challenge Options sheet (either one for display or one per student)
- Engineering Challenge/Solutions Graphic Organizer (two for teacher to model and one per student)
- White paper for model/design (at least a couple of sheets per student)
- Writing Template (one per student)
- Equity sticks, a randomizer, or any other tool ensuring all students participate
- Markers
- Crayons

- Pencils

Suggested Teacher Preparation:

- Preview the websites listed in Sources 1-5 to understand how the organizations/individuals address/handle noxious weed/invasive species/population control challenges in order to provide an example when modeling the graphic organizer for students.
- Decide whether to ask the Assessment step questions throughout the three days of the lesson or wait to ask them at the completion of the lesson.
- Decide if you will let students work in groups for Part 2: step 4.
- Decide amounts of student work time for Day 2 and Day 3.
- Optional activity - Find the name of your local Weed & Pest Control Director (Source 6) <http://www.wyoweed.org/about/district-offices#Table> and your local Game & Fish Warden (Source 7) <https://wgfd.wyo.gov/regional-offices>. Contact the person to see if he/she can come in to listen to your students present their final essays on how they are going to be good stewards and help solve problems.

Standards:

Science: 3-LS4-4 (Explicit), 3-5-ETS1-2 (Practiced/Encountered)

Social Studies: SS5.4.2, SS5.4.3 (Explicit)

ELA: 3.W.2.a, 3.W.4, 3.W.8, 3.L.1, 3.L.2, 3.L.3, 3.SL.1, 3.SL.4, 3.SL.6 (Practiced/Encountered)

CVE: CV5.2.2, CV5.3.1 (Explicit)

Vocabulary: No new terms are introduced in this lesson.

Instructional Procedure/Steps:

Day 1:

1.  Say: **“In our last lesson, we learned about some people who practice stewardship in their careers every day. These people, as well as several others**



In this task, students will be engaged in the higher order thinking skill of synthesizing by designing, inventing, imagining, and creating their solution to the challenge option.

who are stewards of the land, have been facing the same type of challenges for many years. We have talked about a few of those challenges and why it is important that people are responsible citizens and good stewards. Even though the individuals in these occupations are doing their jobs, it's not enough! People like you and me also need to be stewards and help in the efforts to solve these problems. Today, you are going to pick one of the challenges discussed in this unit, and you are going to 'invent' some kind of technology (machine, device, program, better/safer options with things that already exist) that could help solve these problems."

Either display the Challenge Options or pass out copies to students. Read the Challenge Options aloud.

2. Display the Engineering Challenge/Solutions Graphic Organizer. Model Solution 1 for the Weed and Pest challenge on the graphic organizer. Be sure to explain your thinking out loud to students. An example follows: *"I know that Weed and Pest uses chemicals to spray and kill noxious weeds. This could be my first solution to get rid of these weeds that are harming the land. That means, on my graphic organizer, I will write 'Using chemical spraying' in the Solution 1 box."*
3. Have students share with an elbow partner their opinion about whether the solution is a good solution to the challenge and if it practices good stewardship.
4. Repeat step 2 by modeling Solution 1 for the Game and Fish challenge on the graphic organizer. Be sure to explain your thinking out loud to students. An example follows: *"I know that Game and Fish employees want to make sure that mule deer herds are able to safely migrate between summer and winter habitats. Fencing modifications are one way that Game and Fish employees help maintain*

these migration corridors. That means, on my graphic organizer, I will write 'Fencing modifications' in the Solution 1 box."

5. Have students share with an elbow partner their opinion about whether the solution is a good solution to the challenge and if it practices good stewardship.
6. Say: **"Your job is to help either the Game and Fish or the Weed and Pest organizations and be good stewards by brainstorming possible solutions to the challenges that they are facing."** *It is the hope that students will decide on a topic and develop a problem/solution for that topic. Understanding that the concept may too broad for students not exposed to the real-world problems, the teacher may want to give students access to the websites listed in this and previous lessons.*
Either display the Challenge Options again or refer students back to their copy of them. Say: **"Choose which Challenge Option you want to tackle."**
7. Have students brainstorm possible solutions to their chosen challenge. Pass the Engineering Challenge/Solutions Graphic Organizers and sheets of white paper. Say: **"Brainstorm different solutions on the white paper. When you have at least three solutions, fill out the problem/solution boxes to organize your ideas. You may use my examples as one of your solutions if you choose. You can also work with a partner. Do not complete the bottom box today."** Do not have students complete the final box today. They will do that in Day 2 of the lesson. If students are having trouble generating solutions to the challenges, have them back up and think about causes of the problem. For example, if I want to solve the problem of trying to keep mule deer migrations routes open, I might start by identifying why they are at risk. I can then brainstorm solutions that keep migration routes open.

8. When all students have filled in three solutions on their graphic organizers, collect them for Day 2 of the lesson.

Day 2:

1. Pass out students' graphic organizers from Day 1. Say: **"Today, you will share your solution ideas with each other in order to collect feedback to help you make a decision on which solution you think is best."**
2. Have students share ideas with an Inside/Outside Circle. Divide students into two circles with the inside circle students facing the outside circle students. Say: **"Inside circle, rotate two spaces to your right. Now, share one solution idea with the person you are facing. Outside students, listen to your inside student's solution, and let he or she know if you think the solution will solve the problem and show good stewardship practices. After commenting, outside students share one of your solutions with your inside partner, and inside student offer your feedback. We will do this three times. Each time that we rotate, be sure to share a different solution with each new partner."** Rotate circles a total of three times. Either have the inside circle keep moving spaces and directions or alternate by having both circles move. Make sure that students get a new partner each round.
3.  After students have shared in the circles, have students return to their seats. Say: **"Using feedback that you received from your classmates, choose which solution you think is best, and complete the last box on your graphic organizer."**
4. When students finish completing their graphic organizers, pass out sheets of white paper. Say: **"Now you will**



In this task, students will be engaged in the higher order thinking skill of evaluation by choose a solution and explaining why that solution is best.

design some kind of technology that will help bring your solution to life. This could be a machine, a device, or even a way to improve a current technology to make it more effective. It must be a realistic design. Aliens cannot be zapping weeds to make the weeds disappear. You will have some time today and a little time tomorrow to finish your design.” Set an amount of time for students to work on their designs. If you wish, let students work in groups of two or three. When your time is up, collect students’ technology designs and their completed graphic organizers. Students will need both for Day 3 of the lesson. For assessment purposes, students’ graphic organizers must have an accurate problem listed, multiple solutions provided, and a “best” solution written and justified in the final box.

Day 3:

1. Pass back students’ design sheets. Provide a set time for students to finish their designs. Say: **“You have _____ to finish your designs. Be sure to label the design model.”** Students will include with their model an essay in step 3. For assessment purposes, design models must illustrate a design that could be possible. It is not fictitious; for example, aliens vaporizing noxious weeds. It must also serve a purpose and connect to the challenge.
2. Pass back students’ graphic organizers. Students will use the information from it and the unit to write a 5-paragraph essay.
3.  Pass out copies of the Writing Template. It provides paragraph starters to help students organize their ideas. Give students a set amount of time to complete their templates then write essays. When students are finished, collect designs, templates, and essays. To demonstrate proficiency, students’ essays must involve students taking



In this task, students will be engaged in the higher order thinking skill of synthesis by thinking about how they have learned to be a better steward.

components from their graphic organizers and effectively implementing at least three of the five components into the writing template.

Assessment:

See Day 2: Step 4 and Day 3: Step 3 for assessment opportunities. If you have time, share design models and essays with the whole class through presentations or a gallery walk. For a final reflection/wrap-up, students will engage in a thoughtful examination of the learning that occurred during the unit. Facilitate this by pulling equity sticks or using another equal opportunity tool. Below are prompts/questions to ask during the reflection:

- Give an example of how you can be a steward.
- What did you learn about Wyoming’s culture that makes us unique?
- What will happen to future generations if we do not choose to be stewards
- How do you feel when you see of examples of good stewardship? Bad stewardship?
- Why do you think stewardship of our wildlife, plants, and recreation is important?
- Do you think Wyoming citizens and tourists can continue to enjoy the public lands if we are not stewards? Why? Why not?

TEACHER NOTE: A possible extension activity could be to invite the local Game Warden, Weed and Pest Director, Mayor, parents, etc. into your classroom to listen as your students present their design ideas.

Credits/Sources:

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3. Wyoming Migration Initiative. (2014, March 8). *The Red Desert to Hoback: Mule Deer Migration Assessment*. Retrieved November 28, 2017, from http://www.wyobio.org/files/2014/2446/8224/RDH_Migration_Assessment_Final.pdf
4. Wyoming Beef Council. (2016). *The Fieldgrove Ranch: On Cattle and Conservation*. Retrieved September 16, 2018, from <https://www.wybeef.com/meet-our-ranchers/the-fieldgrove-family/>
5. Wyoming Game and Fish Department. (2011-2018). *Wildlife in Wyoming: Field Operations*. Retrieved September 16, 2018 from <https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Field-Operations>
6. Wyoming Weed and Pest. (n.d.) *District Offices*. Retrieved August 13, 2017, from <http://www.wyoweed.org/about/district-offices#Table>
7. Wyoming Game & Fish Department. (2011-2018). *Regional Offices*. Retrieved August 13, 2017, from <https://wgfd.wyo.gov/regional-offices>

Challenge Options

Wyoming Game and Fish

The Game and Fish Department is in a constant battle with managing the populations of wildlife. They need to make sure the populations don't get too high and that they don't get too low.

Wyoming Weed and Pest

The Weed and Pest Council is in a constant battle with managing the noxious weeds and invasive species that are taking over the native plants. They need to get the invasive species out and make sure that the native species stay safe.



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Challenge Options

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Engineering Challenge/Solutions

Challenge

Solution 1

Solution 2

Solution 3

The best solution is _____ because:



Writing Template

Paragraph 1

Because Wyoming is so unique, we as stewards want to keep that uniqueness for current and future generations. I think Wyoming is unique because...

Paragraph 2

I know many careers in stewardship face challenges. One challenge I know about is... I know about this challenge because...

Paragraph 3

There are many great examples of stewards in Wyoming. Three ways I can be a steward are...



Writing Template

Paragraph 4

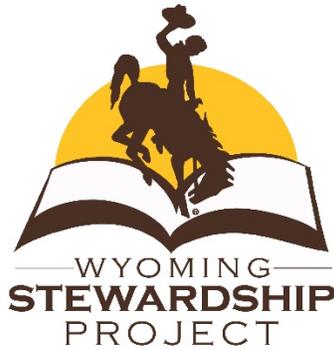
I can practice good stewardship by getting involved and helping to solve problems on Wyoming lands. Two solutions I have thought of are...

Paragraph 5

The solution I think is best is _____.

I think my solution shows stewardship because ...





Glossary

Attributes	a quality or feature of someone or something
Characteristics	a feature or quality belonging typically to a person, place, or thing and serving to identify it
Ecologist	a person who studies how animals and plants interact in an environment
Entrust	to give somebody the responsibility of doing something or of caring for someone or something
Game warden	a person who cares for wildlife and makes sure that hunting and fishing laws are obeyed
Generation	a group of individuals, most of whom are the same approximate age
Invasive	growing and dispersing easily, usually to the detriment of native species and ecosystems
Native	(1) a person born in a specific place or associated with a place by birth, whether subsequently a resident there or not (2) found originally in a place, not introduced from another place
Noxious Weed	plant that has been introduced, accidentally or intentionally, into an environment and causes or is likely to cause environmental or economic harm; plants that have been declared by a legislative body as worthy of regulation and management
Park Ranger	a person in charge of managing/caring for a park
Permit	official permission to access land or use resources for a period of time

Plant	a living thing that relies on photosynthesis
Public land	land owned by a government; may or may not be accessible to the public
Recreation	an activity that is undertaken for pleasure or relaxation
State Trust Land	lands that were granted to Wyoming and designated to generate revenue for public schools and other state institutions
Stewardship	As Wyoming citizens, we are stewards entrusted with the responsible development, care, and use of our resources to benefit current and future generations.
Unique	being the only one of its kind; unlike anything else
Wildlife	living things, especially mammals, birds, and fish that are neither human nor domesticated