

Wolves in the Wild: A Case Study of Wolf Reintroduction in Yellowstone National Park
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TEACHER OVERVIEW WORKSHEET The student handout follows.

Objectives:

- Determine the feeding relationship in YNP by drawing a food web of the ecosystem.
- Understand the positive and negative ecological factors associated with wolf reintroduction in YNP.
- Understand the positive and negative economic factors associated with wolf reintroduction in YNP.
- Investigate the impact wolf reintroduction has had on the stakeholders associated with the greater YNP ecosystem.
- Form an opinion about wolf status under the ESA and debate about it.

In Part I, all students conduct background research to understand how wolves fit into the functioning GYE. Discuss the answers to these and be certain students understand the ecology of the wolves in the GYE before continuing on to Part II.

In Part II, students will complete a jigsaw (see instructions below) to learn about the different groups that have opinions about the reintroduction of wolves. Each student will research their assigned stakeholder group and determine if that group was for/against wolf reintroduction. In their research, they should investigate both economic and ecological reasons. Once finished researching about the stakeholder, they will return to their letter groups and present their stakeholder research. Finally, the letter group will use a whiteboard to classify the stakeholders into pro-wolf and anti-wolf groups, providing reasons why. An example might look like:

Pro Wolf	Anti Wolf
Tourists: Wolves are cool. I will pay money to see wolves. (economic)	Ranchers: Wolves will attack herds of cattle and sheep, costing my business money. (economic)

In Part III, students will decide their opinion about wolves' status under the ESA. They will provide supporting details for their opinion and then take part in a class debate. To conduct the debate, have students move to either a "should be listed" or "should not be listed" side of the classroom. Have each group outline the supporting facts for their side on a white board. Once students have completed and discussed their position, let each side debate/discuss the status of the wolves.

How to Jigsaw:

1. Students are randomly handed a card with a stakeholder group picture on the front and a letter on the back.
2. Students will work with other students assigned to their stakeholder group to put together an accurate picture of the stakeholders' views about wolf reintroduction. For example, all students assigned to ranchers will work together.

- Once all stakeholder research is complete, students with the same letter cards will work together. For example, park biologist A, rancher A, tourist A, environmental A, USF&W A, and State A will be in one group. Each letter group will hear from the 6 members in the group about the different aspects associated with wolf reintroduction. Each student should take notes about the other presentations. As a whole, each group will write a summary of what was learned.

In order to do this, print out the following and cut them into cards. On the back of each card write the letter A. Repeat using the letter B for the next set of cards. Repeat until you've got enough groups for all students in your class. If your class is not evenly divisible by the number 6, you can eliminate some of the stakeholders in the last group, or remove the same stakeholder from every group.

<p style="text-align: center;">Park biologist</p> 	<p style="text-align: center;">Cattle rancher</p> 	<p style="text-align: center;">Tourist</p> 
<p style="text-align: center;">Environmental advocates</p> 	<p style="text-align: center;">US Fish & Wildlife</p> 	<p style="text-align: center;">State governments</p> 

Sources:

<http://www.nps.gov/yell/naturescience/wolfrest.htm>

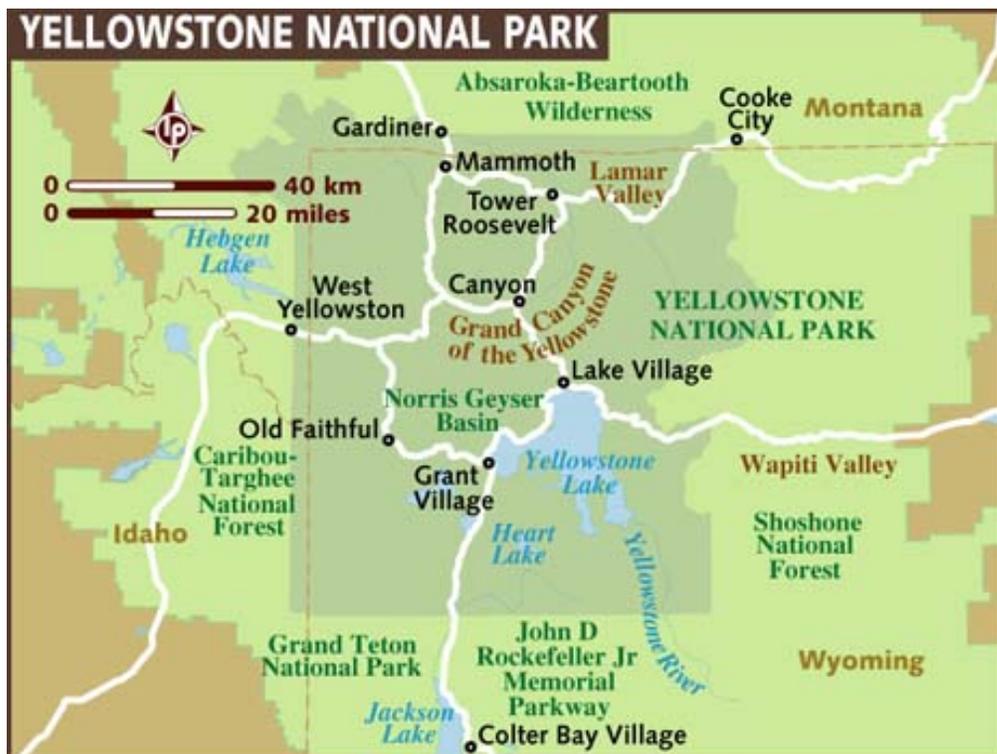
http://en.wikipedia.org/wiki/History_of_wolves_in_Yellowstone

Wolves in the Wild: A Case Study of Wolf Reintroduction in Yellowstone National Park

Introduction: The Greater Yellowstone Ecosystem (GYE) is a varied area that consists of areas of Wyoming, Idaho, and Montana. This ecosystem is composed of grassy valleys suitable for grazing animals, forests of aspen and conifers, and riparian zones and rushing rivers supporting moose, trout and osprey. Within GYE is Yellowstone National Park (YNP), a federally funded park where the ecosystem is protected and maintained. The gray wolf (*Canis lupis*), a natural member of the GYE, was eliminated during the early 1900s due to human interactions, and was reintroduced into YNP in 1995. There was much debate about the reintroduction among park biologists, advocates for tourism, and landowners living around the park. Today, you will research the interests of one of the stakeholders in the wolf reintroduction.

Part I: Background research In order to best understand the wolf reintroduction, you need to conduct some background research. Answer the following:

1. Wolves are apex predators in the Yellowstone ecosystem. Construct a food web that shows energy transfer in the greater Yellowstone ecosystem. You must include wolves, elk, bison, and at least 4 different plant species.
2. What's the habitat of wolves? Where do they live and how?
3. Where in YNP are wolves currently living? On the map of the park below, mark the places where they live. Where outside of the park is suitable habitat for the wolves? Mark places that would be suitable habitat. This will require some research to determine what types of ecosystems surround the park (forests, grasslands, riparian zones, etc.).



- Wolves live in packs. What comprises a typical pack and how many packs are currently living in YNP? Where do these packs live in the park?

Part II: Understanding the Stakeholders

Each of these groups has an opinion about wolf reintroduction into the park. Your teacher will assign you to research one of these groups. You will work with other members of the same stakeholder group to conduct research.

- Park biologists (concerned about the effects on the ecosystem with the loss of the wolf as a keystone predator)
- Cattle ranchers living around YNP
- Tourists visiting the park and tourism companies operating outside the park
- Environmental advocates – especially Defenders of Wildlife
- US Fish & Wildlife Service (manage ESA and wolf reintroduction)
- State governments of Montana, Wyoming, and Idaho (represent interests of people residing in those states)

Working with the other members of your stakeholder group, you should determine:

- In general, what types of people are found in this group? What are they trying to accomplish on a day-to-day basis?
- if the group was for or against reintroduction in the 90s,
- the economic reasons for their opinion
- the ecological reasons for their opinion
- the current status of the wolf population on their group (for example, if you’re a rancher how are the wolves affecting your cattle? If you’re a park biologist, how are the wolves affecting the ecosystem?)

Take notes answering these questions and be prepared to present the ideas of your stakeholder group to a group of all the stakeholders.

Once your stakeholder group has completed its research, your teacher will have you work with your letter group (your letter is on the back of your stakeholder card). Your job is to teach the rest of your letter group about that stakeholder. You will also hear from other stakeholders; take notes over the material presented. Finally, as a letter group, obtain a large white board and divide it into “Pro-wolf” and “Anti-wolf” sides. Summarize where each stakeholder belongs, give one reason why each stakeholder believes this, and state if it’s an economic or ecological reason. An example could be (this is a bad, made-up example so be better):

Pro Wolf	Anti Wolf
	Tourists: Wolves eat bunnies (ecological), which are cute. I want to see and take pictures of bunnies. (economic)

Part III: Debate: We will have a class debate to discuss if Yellowstone wolves should be listed on the ESA or not. In 2008, the Yellowstone population was delisted from “Endangered” to “Experimental Population: Non-essential.” This opened up controlled hunting of wolves that strayed outside the protected park boundaries into Montana and Idaho. Using the knowledge you gained from your classmates, decide if you think the wolves should be protected or not. In the space below, write your opinion and give three supporting details to back up your opinion.