

Activity title: Wolf Reintroduction to Yellowstone National Park

Learning objectives:

By the end of this activity, students will...

- Be able to explain, in their own words, how wolf extinction in Yellowstone National Park affected other species
- Be able to identify 3 different species affected by wolf extinction and explain a mechanism that caused this
- Feel increased ability to think in terms of systems and recognize the interconnectedness of ecosystems
- Be able to recognize how Yellowstone National Park has flaws, and is not inherently “good.”

One or more of the school’s goals that your activity will support

- Evaluating and Critiquing Evidence
 - Students evaluate the evidence for its necessity and sufficiency for supporting the claim.
 - Students determine whether the evidence is sufficient to determine causal relationships between consumption of natural resources and the impact on Earth systems.
 - Students consider alternative interpretations of the evidence and describe* why the evidence supports the claim they are making, as opposed to any alternative claims.
- Evaluating Potential Solutions
 - Students describe how well the solution meets the criteria and constraints, including monitoring or minimizing a human impact based on the causal relationships between relevant scientific principles about the processes that occur in, as well as among, Earth systems and the human impact on the environment.
 - Students identify limitations of the use of technologies employed by the solution.

List of computer files the teacher will need

List the names of any computer files you have created that the teacher will need for your activity. These might include handouts, powerpoint slides, video files, or any other resources you have created for the activity.

1. Worksheet provided (Wolf Reintroduction in Yellowstone National Park)

2. Link to YouTube video:

<https://www.youtube.com/watch?v=UIK0ultXq48&feature=youtu.be>

Materials needed

List any additional materials the teacher will need in order to carry out your activity

1. Accompanying worksheet

Chronological description of what will happen during your activity, including estimated duration of each step.

1. Provide basic information about the video/worksheet: “wolf reintroduction to Yellowstone National Park” but we explain the rest! (2 min)
2. Show the video (5:15 min)
3. Pass out the worksheet and ask the students to fill out the information upon memory (10 min)
4. Possibly reshoot the video again with the worksheet if there were parts students left blank to make sure that the connections between species in the ecosystem are understood!

Full citations of information sources and online videos (numbered list)

Works Cited

1. “Aspen Is Making a Comeback in and around Yellowstone National Park, Because of Predators.” *ScienceDaily*, 2018, www.sciencedaily.com/releases/2018/08/180830143056.htm. Accessed 4 Feb. 2020.
2. Beschta, Robert L., and William J. Ripple. “Berry-Producing Shrub Characteristics Following Wolf Reintroduction in Yellowstone National Park.” *Forest Ecology and Management*, vol. 276, July 2012, pp. 132–138, 10.1016/j.foreco.2012.03.035. Accessed 9 Oct. 2019.
3. “How Reintroducing Wolves Helped Save a Famous Park.” BBC, <https://www.bbc.com/future/article/20140128-how-wolves-saved-a-famous-park>.
4. Farquhar, B. July 3, 2019. *Wolf Reintroduction Changes Ecosystem in Yellowstone*. Yellowstone National Park

5. National Geographic Society. "Wolves of Yellowstone." *National Geographic Society*, National Geographic, 26 Jan. 2015, www.nationalgeographic.org/media/wolves-yellowstone/.
6. Ripple, William J. (01/01/2012). "Trophic cascades in Yellowstone: The first 15years after wolf reintroduction". *Biological conservation* (0006-3207), 145 (1), p. 205.
7. Robbins, Jim. "The New Threat to Wolves in and Around Yellowstone." *The New York Times*, 1 May 2017
8. "Wolf Restoration - Yellowstone National Park (U.S. National Park Service)." *Nps.Gov*, 2016, www.nps.gov/yell/learn/nature/wolf-restoration.htm.
9. "Yellowstone National Park: A Timelapse Journey." *Drone Zone*, www.youtube.com/watch?v=jywhhmnGjeU.

Image citations:

<http://viemagazine.com/article/adventures-in-yellowstone-national-park/> - Yellowstone
<https://www.quora.com/What-animal-is-the-apex-predator-right-now> - Predator relationship
<https://visityellowstonenationalparkyall.weebly.com/yellowstones-wildlife.html> - food web
<http://pngimg.com/download/66225> - elk
<https://pngimage.net/aspen-tree-png-6/> -aspen
<http://clipart-library.com/clip-art/willow-tree-silhouette-clip-art-14.htm> - willow
<https://www.freeiconspng.com/images/dirt-png> - dirt
https://missoulain.com/news/state-and-regional/large-section-of-yellowstone-river-closed-to-all-recreation-due/article_e8c97ecc-ec96-5b51-bffa-25d60fb7d9b5.html
 -yellowstone river
<https://renecarrillo.com/tag/self-development/> - river
<http://pngimg.com/download/23191> - wolf
<https://www.pngkey.com/maxpic/u2q8a9r5i1t4y3q8/> -berry
<http://pluspng.com/png-trout-4744.html> - trout
<http://www.pngplay.com/image/29557> - beaver