

Name _____ Yellowstone National Park Ecosystem Project

Is Survival a Team Sport?

The superintendent of Yellowstone National Park has asked you, a wildlife biologist working in Yellowstone, to create a display for the Old Faithful visitor center, titled "Is survival a team sport?" Your display must include detail information about the Yellowstone ecosystem before wolves were introduced in 1995 and how the ecosystem was affected by their introduction from years 1995 till present. In addition to wolves, you need to consider the interaction of elk and beavers. **At least** three additional animals/plants of your choice should also be included. (Grizzly Bears, cougars, coyotes, bison,...)

You will present your display of the Yellowstone ecosystem to small groups of 5th graders.

Your display must include the following:

- abiotic and biotic factors
 - How do the abiotic factors affect survival of the species?
 - How do the biotic factors affect survival of the species?
 - What are the biotic and abiotic stressors that can interfere with a species survival?
 - How do the stressors affect the ecosystem?
- Discuss interactions between species
 - mutualism
 - Commensalism
 - parasitism
- food chain(s) – show relationships
- food web – show relationships
- Did introducing wolves make the Yellowstone ecosystem healthier? Or did introducing wolves into the ecosystem weaken it? Your argument should be strongly supported with scientific evidence from your research.
- What role do scientists play in the Yellowstone ecosystem?
- How has human involvement impacted the ecosystem?

Three people at most can work together on the project. Students will be graded and questioned individually on their knowledge of the topic.

Your display can take the form of a tri fold display or poster board OR you can produce an electronic display using power point or Google slides. Three dimensional models can also be used along with electronic or paper displays.

Be sure to use the rubric to insure that you obtain all possible points for credit.

All displays are due by _____

Resources

Consider the following links to begin your research:

<https://www.nps.gov/yell/learn/yellowstone-science.htm>

<https://www.nps.gov/yell/learn/nature/ecosystem.htm>

<https://www.nps.gov/yell/learn/nature/wildlife.htm>

<http://www.yellowstonepark.com/wolf-reintroduction-changes-ecosystem/>

<http://www.yellowstonepark.com/gray-wolves-impact-elk/>

<https://www.nps.gov/yell/learn/nature/climatechangeinfo.htm>

<https://www.nps.gov/yell/learn/nature/climate-examine-evidence.htm>

<http://www.bioinfo.rpi.edu/bystrc/pub/artWolves.pdf>

<http://www.hcn.org/wotr/wolves-and-grizzlies-a-grand-symbiotic-relationship>

<https://www.nps.gov/yell/learn/nature/cyclesprocesses.htm>

<http://www.yellowstonepark.com/wolves-bring-yellowstone-back/>

http://news.nationalgeographic.com/news/2003/12/1204_031204_yellowstonewolves.html

<http://www.nationalgeographic.com/animals/mammals/g/gray-wolf/>

<http://www.nationalgeographic.org/media/wolves-yellowstone/>

<https://www.nps.gov/yell/learn/nature/wolfmgnt.htm>

<https://www.fws.gov/mountain-prairie/es/grayWolf.php>

Video

https://www.nsf.gov/news/special_reports/science_nation/wolfecology.jsp

<https://www.nps.gov/media/video/view.htm?id=2525FF49-155D-451F-675C4D190675D3C5>

<https://www.nps.gov/media/video/view.htm?id=2502A102-155D-451F-67AB4A54A3CA1BEA>

Use other resources such as books and magazines.

Rubic

	4	3	2	1
Biotic factors	Excellent description of 4 or more factors	Good description of 3 or more factors	Poor description of 2 or more factors	Poor description of 1 or more factors
Abiotic factors	Excellent description of 4 or more factors	Good description of 3 or more factors	Poor description of 2 or more factors	Poor description of 1 or more factors
Stressors	Excellent description of 3 or more stressors affecting the ecosystem	Good description of 3 or more stressors	Good description of 2 or more stressors	Poor description of 2 or more stressors
Interactions	Excellent description of the interactions between the organisms in the ecosystem	Good description of the interactions between the organisms in the ecosystem	Poor description of the interactions between the organisms in the ecosystem	No description of the interactions between the organisms in the ecosystem
Food Chain	Producer and three consumers considered	Producer and two consumers considered	Producer and one consumers considered	Only consumers considered
Food web	Producer to top predator with multi layers considered	Producer to top predator with three layers considered	Producer to top predator with two layers considered	
Grammar, spelling Neatness	Excellent	Good	Poor	
Argument of the health of the ecosystem and survival of ecosystems species	Argument supported with excellent evidence cited. (3 or more types of evidence used)	Argument supported with good evidence cited. (2 or more types of evidence used)	Argument not supported with any evidence	Argument not stated.
Resources	Five or more resources used from different sources such as internet, library, books, magazines	Three resources used from different sources.	Three resources used from the same source (example: internet only)	Less than three resources used.

