



Text Complexity Analysis of

Yellowstone Ecosystem Needs Wolves and Willows, Elk and... Beavers? (title)

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Recommended Complexity Band: 9-10

Qualitative Measures

Meaning/Purpose: *(Briefly explain the levels of meaning (Literary Text) or purpose (Informational Text.)* The author's purpose is to inform the audience about the necessity of the beaver in Yellowstone ecosystems. The author also discusses how the reintroduction of wolves into Yellowstone has not, by itself, restored all aspects of the ecosystem.

Text Structure: *(Briefly describe the structure, organization, and other features of the text.)* The text primarily uses cause and effect and problem/solution text structure. It explains how the ecosystem has changed due to the removal of the wolf population. This, in turn allowed elk to prosper, eating a lot of willow, thus decimating the food supply of the beaver. The reintroduction of wolves has since decreased the elk population but the willow has not made a great comeback. Beavers still have a reduced food source and lack of proper dam building supplies. The willow can't make a comeback because the beaver cannot dam the river.

Language Features: *(Briefly describe the conventions and clarity of the language used in the text, including the complexity of the vocabulary and sentence structures.)* The article does use a few domain specific words (ecological, ungulates, substrate, trophic cascade, ecosystem, sediment deposition) and academic words (inextricably, ubiquitous, establishment, reintroduction, resilience, threshold.) It also features a few expressions such as, "well-choreographed steps" and "stream networks."

Knowledge Demands: *(Briefly describe the knowledge demands the text requires of students.)* Students will need to know some basic ecological concepts to understand the text such as ecosystems and food webs. Students also need to have a basic knowledge of how changing an organism in a food web can affect other organisms, or a trophic cascade. Basic knowledge on predator-prey relationships and biogeochemical cycles would further their comprehension of the text.

Text Description

Briefly describe the text: This article, designed to support reading in the content area, discusses the effects of the wolf population in Yellowstone National Park, as well as how other organisms are linked in this food web. As the wolf population decreases, the elk population increases due to lack of predation. The larger elk population decimates the willow population, a prime source of food and building for the beaver. As beaver population decreases, streams no longer deposit enough sediments. This then changes the willow population, because they are no longer able to take root in the stream.

Quantitative Measures

Complexity Band Level (provide range): 9-10

The text falls in the midrange of the 9-10 grade band according to a quantitative reading measure.

Considerations for Reader and Task

Below are factors to consider with respect to the reader and task.

Potential Challenges this Text Poses:

Students may need a visual map of the area in Yellowstone where this is occurring. Students should also be aware that it is a protected national park.

In addition, it would be helpful to give a short history lesson on why the wolves were removed from Yellowstone National Park in the first place. (This link would be helpful for teachers if they are unaware of the history of wolves in Yellowstone.: <http://www.bioinfo.rpi.edu/bystrc/pub/artWolves.pdf>)

Recommended Placement

Briefly explain the recommended placement of the text in a particular grade band: The qualitative measure, as well as the quantitative measures place this article in the 9-10 range, as most of the measures fall in the first and second range. These factors as well as content of the text put this article in the 9-10 grade range.