

### **Project Summary: Predator as the Forest's Guardian**

Wolves have always been portrayed as the villain in children stories. They have sharp teeth and claws, and they are sneaky and strong. In reality, they are not only many children's nightmare, but also rancher and hunter's vexation. Wolves are our competitors for food source and living space, and they damage our livestock and create great financial losses. Thus actions have been taken upon to eliminate wolves. 'Relentlessly shot, trapped, and poisoned, even in nature reserves, gray wolves were gone from the West by the 1930s.' (1) What human had thought to be their victory turned out to be an ecosystem disruption and evoked loss in biodiversity.

People might imagine that with the removal of top predator, organisms could roam freely across the field without fear and thrive in population without being wiped out by carnivores. This is true for wolf's main prey—elk (wapiti), but not so lucky for the plants. 'Wapiti are the vacuum cleaners of vegetation. They eat hundreds of species of plants—low, high, tender, tough—as far as they can reach.' (2). Through out the six Rocky Mountain national parks in Canada and the USA: Jasper, Banff, Yoho, Kootenay, Yellowstone, and Rocky Mountain—aspen has been 'an indicator of ecological conditions because they have maintained their presence for thousands of years through vegetation reproduction, and these communities have high biodiversity.' (3) But with the removal of wolf population, elk population exploded, and the competition for food not only increased within this species but also among other species. Thus under the intensive consumption, the size of aspen stand shrunk and was not able to recover properly.

From environmentalist's analysis of aspen recruitment, the data showed that 'approximately 10% of current over story aspen originated before 1871, 85% between 1871 and 1920, and 5% after 1921.' (4) We can notice that successful aspen recovery occurred before the wolf population depleted, and ceased after a loss of the predator-prey relationship between the wolves and elk. Without the wolves to control elk populations, aspen seedlings were eaten before they got the chance to grow into tall trees. Animals that shared the environment had greater food competition, and lost their habitats without the aspen. As a result, the scientists conducted a live experiment and restored the wolves back to the national parks. Statistics have shown that after the wolves' return, the 'elk population stabilized and fed less on the aspen groves; birds and beaver prospered due to aspen grow, and plant eater like bison increased in number.' (2)

This entire cycle illustrates the importance of maintaining balance in the ecology food chain. 'Ecosystems are paradigmatically among the most complex systems known to science. They contain many different components (e.g., individuals within species populations, species within communities) interacting directly and indirectly in highly interconnected networks.' (5) Every organism performs its own duty and contributes to the ecosystem cycle. In my illustration, I

want to show that there is no good guy or villain in an ecosystem. Everybody performs its duty either as a predator or a prey, and the relationship forms an interlinked system that taking away any part would break the linkage and cause a disruption in the ecosystem. Deriving from my research on the relationship of wolves, elk, and aspen, my work is intended to show another perspective on predators to human and have people think more about the possible consequences of what we do. To us, wolves might be a hazard. But in order to have a healthy ecosystem, predators are necessary to stabilize other organism's population, so we should not extinguish any organisms for our own convenience.

In my image, I portray wolves as the guardians of the forest with the weaker animals behind them, and the elk (which are usually considered harmless for humans) as the invasive titan incorporating with human's weapon. The 'evil' side is portrayed in red, the color of blood. The dark background is in the shape of an aspen forest, but it is not obvious because humans who only care about their own profit often neglect its importance. And with brighter colors of the animals, I plan to convey the idea that they live on top the survival of aspen. The overall tone is cold and horrifying as if the animals are declaring war, telling people that they should be fearful when they do such horrible things to the forest.

## Bibliography

- (1) Chadwick, Douglas. "Wolf Wars." *National Geographic Magazine*. 10 Mar 2010. Web. Accessed 20 Apr 2013.  
< <http://ngm.nationalgeographic.com/2010/03/wolf-wars/chadwick-text>>

This article stimulated my interest in the result of the war between human and wolf. And I was shocked to read about what humans have done to the wolves and led me to explore more about the consequences.

- (2) "Wapiti and Aspen." American Natural History Museum. Central Park West at 79th Street, New York, NY. 2 Apr 2013.

After visiting the museum, I understood the general consequences of removing top predators in the forests. I also saw live-size animals in the display case and really experimented their proportions in reality.

- (3) Clifford A. White, Charles E. Olmsted, and Charles E. Kay. "Aspen, elk, and fire in the Rocky Mountain national parks of North America." 1998. Web. Accessed 20 Apr 2013.  
<<http://idahoforwildlife.com/Website%20articles/Website%20articles/Charles%20Kay/2-%20%20Aspen-%20elk-%20and%20fire%20in%20the%20Rocky%20Mountain%20national%20parks%20of%20North%20America.pdf>>

This article pushed my understanding of this topic further. It provided me information of where the experiments and statistics took place so I could move on to create the atmosphere in line with the topic.

- (4) William J. Ripple, Eric J. Larsen. "Historic aspen recruitment, elk, and wolves, in northern Yellowstone National Park, USA." 13 Jan 2000. Web. Accessed 20 Apr 2013. < <http://www.cof.orst.edu/leopold/papers/science.pdf>>

This provided other statistics to prove that there are significant losses of aspen and other organisms after the wolves are removed. I can confidently address this problem with these back up data and convince people to see what has already been observed responding to their actions.

- (5) Schmitz, O.J. "Chapter 1: Introduction." *Resolving Ecosystem Complexity* (pp. 1-8). Princeton, NJ: Princeton University Press. 2010.

This book explains that individuals are not only themselves but also a part of a whole. This summarizes my whole intent in creating this work, that what we are doing breaks the linkage of an ecosystem and disrupts the food chain that has been going on forever.

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