

The Positive Impact of the
Wolf Restoration in Yellowstone
National Park

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Abstract

Wolves have always been a mystical figure in early history. Everyone has read the fairy tale of *Little Red Riding Hood and the Big Bad Wolf* (Perrault) and how the wolf wanted to eat the little girl. In the *Three Little Pigs*, (Jacobs) the wolf has been vilified as a predator, trying to kill the *Three Little Pigs*. Not all folklore made the wolf out to be the bad guy. Rudyard Kipling wrote a story called, *The Jungle Boy*, in where an orphaned boy was raised by a pack of wolves. Sometimes people tend to remember the bad and forget the good. Unfortunately, the wolf has been associated as the *big bad wolf* in history for a long time. The wolf has been revered, vilified, feared, mystified, and made into God like symbols. Farmers believe them to be predators and are a threat to their livestock and survival. They have been poisoned, trapped tortured and systematically slaughtered. Although research is showing a positive impact that the gray wolf has had in Yellowstone, many people still refuse to believe the science.

After near extinction, in 1995, wolves again found their home in Yellowstone National Park. (Yellowstonepark) After a lot of controversy, both from animal rights activists, farmers, scientists, environmentalist, and citizens with many opinions, 31 wild gray wolves, transported from Canada were released into Yellowstone. (Smith) There has been a lot of research done about predatory animals and their contribution to wildlife management. Many people believe that science should be the prime motivator in whether the gray wolf is necessary to keep Yellowstone's environment in balance. And that research and data collected, should determine the outcome of gray wolves to live or not in Yellowstone. Research has proven that gray wolves are having a beneficial impact in Yellowstone. What are those benefits and how do we convince people that wolves are not bad for Yellowstone. Science has proven that gray wolves contribute greatly to the healthy environmental impact and should be allowed to live in Yellowstone.

Introduction

When in 1871, Ferdinand V Hayden, head of the U.S. Geological and Geographical Survey, led a third expedition team into Yellowstone, the wolf population was already in decline. (Geological Survey) Wolves were considered to be predators and were fair game for hunters and farmers. Being in the National Park did give the gray wolves some protection. In 1926, the last wolf was killed in Yellowstone Park. (Archbald)

As time has gone on and we have learned many things about ecology and the benefits of preserving indigenous plants and animals, we have also seen the effects it has had on the balance of nature. One species of animal can be a food source for many other animals. Eliminating one plant or animal could impact the ecosystem and food chain. Many changes happen when a predator is eliminated from an ecosystem. (Ames) Scientists believe that top predators play very important roles in a healthy environment. And without the top predators, there would be no balance. “The impact of removing a top predator in an environment causes a trickle down through each level, upsetting the ecological balance by altering numbers of different animal species, until the effects are finally felt by the vegetation.” (Ames) Without some type of control system, an ecosystem can't survive. Wolves are top predators in Yellowstone and they provide the control system that is needed to ensure that the environment stays balanced. They eat the elk and deer and prevent the elk and deer herds from overpopulating. With less deer and elk, aspens, willows, berry bushes and many other shrubs and trees are allowed to grow, providing further food for birds, muskrats, and other small and larger animals. Willows provide food and housing for beavers which in turn stabilize river banks. Berry bushes provide nutritious food for bears, adding weight, just before hibernation.

Everything in the environment changes when the top predator of an area is eliminated. It becomes a trickledown effect that changes the dynamics of the environment. (Ames) That is not a good thing.

Yellowstone has a very fragile ecosystem. Elk, deer, and many other animals were much better off without the gray wolf and they could thrive in more significant numbers since there was no longer a natural predator. Gray wolves benefit because they have an abundant food supply. But without predators, the elk and deer herds grew and foraged on new sprouts of the Aspen trees, preventing fresh sprouts from growing and decimated new Aspen reproduction. (Kauffman) It is true that wolves are opportunists and would kill a farmer's livestock when they can. Wolves see only an easy meal. But there are ways to minimizing the loss of farm animals. Farmers seem less interested in living with the wolf and more interested in eliminating the wolf entirely. Compensation for the killing of livestock has been provided by nonprofit environmental groups. (Gray Wolf) In 2020, the State of Wyoming, introduced, Bill NB0035, Wolf Depredation Compensation Act. This bill was specifically targeted at the Gray Wolf. The Act directed the Department of Agriculture to compensate farmers for the killing of their livestock by a gray wolf. (“HB0035 - Wolf Depredation Compensation”)

But how do we keep the balance between the people who feel the wolves should be eliminated from Yellowstone and those who believe the gray wolf keeps Yellowstone's environment balanced? Understanding the impact of removing the gray wolf from Yellowstone will allow us to make beneficial changes in all parks and assure the gray wolf's survival. Only with prolonged research can we have any hope of convincing the nay Sayers of the benefits that the gray wolf brings to our national parks.

Background:

There are reasons for farmers to be concerned about their livestock with the restoration of wolves. But how justifiable is it? Some people say that the concerns stems from prejudice and ignorance of science. But farmers and people that live around the park feel threatened and in danger for themselves and their livestock. Others are afraid of what they don't know about wolves and preconceived notions that wolves are vicious and should not be allowed to exist anywhere, much less in our national parks. Animals that are predators have always fascinated and scared people. A person's first instinct is to eliminate the threat. Although a lot of data has been collected on the impact of the gray wolves that live in Yellowstone, researchers believe that more data is needed over a long period of time to really know all of the changes that were implemented with the introduction of wolves in the park. Wolves were not part of the park for over seventy years so a lot has changed in Yellowstone due to the loss of the gray wolf. Researchers are already seeing many beneficial changes however.

The National Park Service estimates that the average size of a gray wolf is 110 lbs for males and 90 lbs for females. Their sense of smell is estimated to be over 1000 times better than humans. Wolf's howling can be heard over 7 miles. They usually live 4-5 years in Yellowstone. (Gray Wolf) According to the National Parks Service, wolves are highly social animals and live in packs. The pack is a complex social family, with older members (often the alpha male and alpha female) and subordinates, each having individual personality traits and roles. Wolves mostly feed on elk and deer. But this varies according to weather conditions and climate and seems to make a difference in what wolves eat. The NPS says that ninety percent of their winter prey in Yellowstone is elk. The elk have gotten smarter and move to higher denser ground where the wolves can't always go. And harsher winters can make it more difficult for a wolf to hunt. In

the summer, wolves' diet is about ten percent deer. (NPS) Wolves hunt in packs in a team effort, making it a very efficient killer. They separate out and surround the prey. One will approach the prey from the rear and others will fan out and close in on all sides. They hunt in co-operation with each other. Wolves are opportunists. Unlike some animals that wait in ambush for their prey, wolves chase their prey and feel out their weaknesses. (How Do Wolves Hunt)

In the 1800s, there was a lot of movement into the northwest region of the United States. People came as farmers, cattle herders, ranchers and settlers, looking for a new way of life. Forests were demolished; leaving a smaller habitat for the wolves. This brought people into direct contact with native predators. A lot of the gray wolves' habitats were destroyed. Cattle and livestock were easy prey for a wolf. People considered the wolves a threat and systematic extinction of the wolf was begun. Only more desirable wildlife, elk and deer were welcomed in Yellowstone. (Archibald)

After the Yellowstone National Park was established in 1872, (NPS) wolves were not welcomed in Yellowstone. They were considered predatory and were dangerous to visitors and farmers that had livestock around the park. Park rangers considered them a threat and killed any wolf they came in contact with. They killed the wolves in what we would consider today, inhuman, using traps, shooting and poisoning. (Jones) The extent of the extermination can be found in the 1920's monthly records of the park wardens. The wardens kept extensive records and dead wolves could be seen hanging from the walls of the ranger's offices. (Jones) By 1925 there wasn't many wolves left to kill in Yellowstone. Steel traps were prohibited in 1928 and poison was banned in 1931. In 1933, new directories for parks and park wardens began to

change the fate of the gray wolf, making predatory animal's part of the natural park environment.
(Jones)

The gray wolf was present in Yellowstone when the park was established in 1872. (NPS) By 1926, the wolf was gone from Yellowstone. (NPS) In 1872 there was no thought of the consequences of losing an entire species. We didn't know much about what losing our top predator could do to our environment. But now we do know the consequences and they are many and can be catastrophic. We now think entirely differently about the need to save all species on earth. To lose even one creature is unfathomable to most people. But losing the wolf in Yellowstone changed the whole environment and almost destroyed the natural balance. Early park rangers had a large role in the slaughter of gray wolves in Yellowstone. Knowing the role of our park rangers today makes it impossible to believe that they could participate in the wolves' extinction in the park.

The *Yellowstone National Park Act* of 1872 stated that the Secretary of the Interior "shall provide against the *wanton destruction* of the fish and game found within said Park." (YNPA) And what does "wanton destruction" really mean when referring to the gray wolf? In Merriam Webster Dictionary, *wanton destruction* means "*merciless and inhumane, malicious*". The park rangers must have missed that provision of the Yellowstone National Park Act. This was an era before people, including many biologists, understood the concepts of ecosystem and the interconnectedness of species. People didn't understand that wolves, in order to live, had to kill other animals.

Wolves had an interconnection to the elk and deer in Yellowstone. Between 1914 and 1926, at least 136 wolves were killed in the park; by the 1940s, wolf packs were rarely reported. By the mid-1900's, wolves had been almost eliminated. By 1926 wolves were totally exterminated and none existed in Yellowstone. (NPS) It is not clear why humans who settled in the United States brought with them an intense hatred and fear of wolves. Because wolves can upset farmers by eating their livestock, human activity such as poisoning, trapping, and shooting wolves led to the almost complete extinction of the wolf in the United States. (Archibald) An intensive survey in the 1970s found no evidence of a wolf population in Yellowstone at all. (NPS) But once gray wolves were introduced back into Yellowstone, good things began to happen.

In 1995 and 1996, the FWS brought fourteen western Canadian gray wolves into Yellowstone Park and seventeen more gray wolves a year later. Since wolves have a large roaming area and homing instincts, Yellowstone rangers built three holding pens and elk carcasses where planted to attract the wolves. (YPT) This gave the wolves' time to acclimate to the landscape. The wolves were released in the last week of March 1995. (NPS) The wolves weren't given any names but were numbered 1 through 10. Unfortunately, #10, an alpha male crossed the border in to Montana. His mate #9 followed. In April 1995, #10 was illegally shot by Chad McKittrick who received a prison sentence and fine. Wolf #9 gave birth to eight pups. The couple's blood line can be traced in the majority of the wolf packs today. (NPS) Today there are over 600 wolves in Yellowstone. (Smith)

There were compromises made with the local farmers and livestock owners. Farmers and livestock owners were allowed to kill a wolf as long as they officially reported it to the Parks Department within 24 hours of the kill. (NPS)

Elk populations have been studied and counted since the park open in 1872. Researchers have watched the elk herds size increase one year and then decrease in size the following year, leaving no accurate way to prove the impact of gray wolves living in Yellowstone. In the article, *The Challenge of Understanding Northern Yellowstone Elk Dynamics after Wolf Reintroduction*, states that "Hunting alone would not limit the size of the northern elk herd." (Macnutly) What was never understood is in January 1994, there was 19,045 elk living in Yellowstone. But by December 1994, and three months before wolves were reintroduced to Yellowstone, park managers counted 2,254 fewer elk than the previous winter. By 2013, managers counted 3,915 elk which was only 743 more than the herd's lowest count in 1968. (NPS) People who were against the reintroduction of wolves to begin with used these numbers to blame the gray wolf for the decline. (Macnutly) There was no proof provided that wolves were the cause of the decline in elks.

Doug Smith, project leader for the Yellowstone Gray Wolf Restoration Project, says that "With gray wolves restored to Yellowstone National Park, the ecosystem once again supports the full native array of large ungulates and their attendant large carnivores." Smith used comparison of another national park, Isle Royale, where wolves were restored over 50 years before Yellowstone. What they found was that not only was the wolf influential in reducing the coyote and moose population, they also helped restore forest growth. (Smith)

In research by the Ecological Society, they discovered that by controlling the elk and deer herds in Yellowstone, the decreasing population contributed to the re-growth of Aspen trees. Research was done over a period of three years and studied the effect that elk and deer foraging had on the new shoots of Aspen trees. They found that the damage to Aspen trees was directly attributed to the increased numbers of elk and deer in the park and not by a change in foraging habits of elk and deer. (Kauffman) In other words, the elk population grew at such a rate that the Aspen trees could not rejuvenate fast enough. They also found something else interesting. Because of the wolves, elk were afraid of staying too long in one place. Elk started avoiding Aspen trees in risky sites which in return, saved the Aspen sprouts from being eaten. This was also observed in willows. Once again willows grew tall because elk and deer spent limited time eating the willows due to the fear of predator. (Kauffman)

When the Gray wolves were reintroduced into the Greater Yellowstone Ecosystem in 1995, there was only one beaver colony in the park. (Smith) Nine beaver colonies are now found in Yellowstone. Research is still out there on how and why the beaver colonies have increase so drastically. It will take a lot more research before they have the entire answer. It seems that the growth of the beaver colonies have a lot to do with wolves. Because of the wolves, elk did less browsing and eating of the willows and that allowed willow stands to recover. This gave beaver's abundant food and materials with which to build dens, and a chance to multiply. (Farquhar) Doug Smith, Yellowstone National Park's wolf biologist said, "When I first arrived in 1994, shortly before wolves were reintroduced, some willows and aspen trees only came up to my knees. Now I can't see through them. It's like a forest." Beavers need willows to survive in the winters. Elk forage on willows. Without the wolf to control the elk population, the willows were the casualties. Therefore, the beaver colonies also became casualties. Willows and beavers

need each other to prosper. Beavers keep the streams from eroding and beavers need willows to build their dams. They need both to come back at the same time to succeed. (Smith)

There are many other examples of the benefit of restoring gray wolves in Yellowstone Park. The wolf has also helped animals and birds that depend on carrions. (Decaying flesh of dead animals) “Carrions benefit ravens, eagles, magpies, coyotes and bears (grizzly and black), especially as the bears emerge hungry from hibernation. Scavengers that use to rely on winter killed elk can now rely on wolf killed elk.” (Farquhar) Even songbirds can be heard in the Aspen tree.

The reintroduction of wolves has also benefitted the bears. Because there are less elk, there is more berry producing shrubs consumed by elks, leaving the bears more to eat. Researchers have found that the amount of fruit in grizzly bear scat doubled. (Ripple) Wild fruit is an important part of a bear’s diet. (Ripple) In late summer a bear is trying to gain weight before he goes into winter hibernation. “Berries are one part of a diverse food source that aids bear survival and reproduction, and at certain times of the year can be more than half of their diet.” (Ripple) So this is another example of one more animal that benefits from having the wolf living in the park.

There is very little research that wolves are a detriment to the environment in Yellowstone Park. In fact, I couldn’t find any research that shows that gray wolves are bad for Yellowstone. But so much has been said and researched about the benefits of the restoration of gray wolves in to Yellowstone Park. Many people still don’t believe the science and lobby to remove the gray wolf from Yellowstone and all parks. Many still believe that a predator has no

place on earth and that they should all be eradicated. Fear and prejudice drive this opinion and opinions are abundant.

There seems to be no way for opponents and advocates to meet in the middle. It has been twenty six years since the first wolves were reintroduced into Yellowstone but derision still exists. Research that has been obtained to date, provides hard proof that wolves are good for Yellowstone's environment. People need to believe the science. And scientist can't seem to convince the farmers that the pros of having wolves in Yellowstone outweigh the cons.

I visited Yellowstone in 2006 and I can tell you that the abundance of elk are everywhere in the park. And that was eleven years after the gray wolf was restored. There are so many elk that cars have to wait in lines while large herds cross the road. They are on your deck outside your room. In Mammoth, they lay in large herds in broad daylight in the middle of the town square. There have absolutely no fear of humans. Yellowstone is overrun with elk even with the wolf population. If you visit Yellowstone National Park, you can see why elk are considered a problem for the environment. They are not afraid of humans but they are afraid of wolves. Wolves have had only twenty six years to rebound. Before wolves were reintroduces, elks had twenty six years to live without a predator. Without wolves, there is an essential part of the balance of nature missing.

Park management is essential to Yellowstone. Management of the animals in the park is crucial to tourism. There are 3,800,000 visitors to Yellowstone each year. Wolf sightings are a large part of the attraction of the park. (NPS) Since the reintroduction of gray wolves to Yellowstone, gray wolves have become famous in their own right. Including the gray wolf into Yellowstone's management plan is essential to their survival and to the survival of the park.

Wild life is a huge part of the attraction to Yellowstone and why visitors come to the park in millions every year. Yellowstone National Park has a vested interest in making sure that Gray Wolves are never again removed from the park.

Yellowstone visitors spent \$493 million in the communities surrounding Yellowstone in 2015. That spending supported 7,737 jobs in the local area and had a cumulative benefit to the local economy of \$638.6 million. (Koonz) National Parks Service (NPS) estimates that wolf watchers bring \$35M tourism dollars to the greater Yellowstone area annually.

Conclusion

Besides the benefits on Yellowstone National Parks biodiversity, wolves are good for the economy. It's difficult to image that, with all of the research done on the wolves' contribution to the environment, anyone can honestly think that wolves should not be part of Yellowstone's landscape.

The fate of the Gray Wolf in Yellowstone is still in jeopardy. As the wolf pack population grows, its protection under the law has diminished. According to ESA, the gray wolf is no longer endangered. "More than 45 years after gray wolves were first listed under the *Endangered Species Act*; the Trump Administration returned management and protection of gray wolves to states and tribes following a successful recovery effort and delisted the gray wolves from the ESA." (Trump) So what does that mean for the gray wolf?

The reintroduction of gray wolves to Yellowstone Park in 1995-1996 caused untold political ramifications. There were 120 public hearings and more than 160,000 public comments. (Bruskotter) There were many people for restoration of the gray wolf but just as many against it.

Some opinions were derived from myth, misinformation and unwillingness to compromise. Farmers and livestock owners still believed that there was a danger to their livestock herds. Farmers can face severe loss of income if they lose their herds to wolves. But advocates believe that is just another excuse to not accepting wolves back in to Yellowstone. They argue that GPS trackers can be used to see where the wolves are at all times and alert a farmer when the wolves are too close to their farm. But that seems like it will not be a sustainable alternative. The farmer does have reason to be concerned. There are activist groups that offer helpful solutions to farmers to deter interaction between wolves and farm animals. But it will only work if all farmers will work together to resolve the impasse facing both activist and the public. And a willingness to compromise is just not there. (Bruskotter)

Beginning in 2002, and in every year since, the North Rocky Mountain wolf population exceeded the population threshold specified for removal from Endangered Species Act protections. (FWS) But according to, Bruskotter, 15 years of intensive monitoring and rigorous biological studies have not reduced the conflict concerning wolf management nor lessened the controversy surrounding wolf reintroduction. He further states that, “Instead, these management efforts underscore how intricately human behaviors are linked with the long-term success of wolves. Of the 2094 wolf mortalities documented by the FWS over the past decade, 84 percent (1763) were caused by humans, and at least 80 percent of these (1402) were intentional.” Bruskotter believes that the biggest threat to the gray wolf is humans.

In June of 2013, the U.S. Fish and Wildlife Service proposed removing gray wolves (*Canis lupus*, Linnaeus) protections from Endangered Species Act. (ESA) (Bruskotter)

There is no proof that I can find that gray wolves have substantially reduced the elk and deer population in Yellowstone. Because of the harsh winter one year and milder winter another year, it isn't easy to accurately obtain research data to give an accountability of whether gray wolves have contributed to an ecological balance in Yellowstone. The ability of elk to avoid wolves by selecting different habitats is seasonally dependent in YNP. (Mao) On the Northern side of Yellowstone, herds migrate from winter to summer ranges making it impossible to get accurate data on how the elk respond to the wolf. Because each seasonal range presents elk with other habitats and resources from which to choose, elk shows different responses to wolf predation risk between the two seasons. (Mao) The reintroduction of wolves into Yellowstone National Park has provided new opportunities to study several aspects of wolf predation, such as the effects of winter severity on predation patterns. (Mech)

Controversy over the fate of the wolf is alive and well. Where do we stand on the issues? Do we agree with many ranchers and farmers who think that the best place for a wolf is a dead? Do we agree with many environmentalists who think that putting the wolf back where it once roamed is good for the ecosystem and human health? As a top predator, the wolf controls the numbers of grazers and herd animals such as elk deer. Is that a good thing? Less elk and deer will mean more grazing and survival. Do people then have the chance to see a wolf and hear its howl in the wild? Unfortunately for the wolf, this argument will not be settled anytime soon.

All research has shown that gray wolves are beneficial to Yellowstone and have a real positive effect on the ecology. The beaver colonies have grown expeditiously. Sprout of Aspen tress and willow trees that were once only knee high are now enormous and contributing to the growth of beavers, song birds, ravens, and other scavengers. Bears have more berries to eat and have grown in weight which is important for hibernation. Elk and deer have more grazing

because there are less of them to forage. There have not been any large cases of wolf packs ravaging livestock or injuring anyone. One of the most surprising things that amazed scientist is how the rivers in Yellowstone were transformed by the reintroduction of wolves in Yellowstone. Because of the fear factor of wolves, deer and elk completely changed their behavior. Elk and deer began avoiding certain parts of the park where they were the most vulnerable. Those places started to regenerate. Beavers made dams and increased habitat for otters and fish. Yellowstone began to expand its eco system. More coyote kills meant more scavengers. The rabbit and rodent population increased and so did bald eagles and raptors. Even the rivers began to change. Rivers became narrower, meander less and have less erosion. The Wolf Conservation Center attributes this to the wolf. Because there was more vegetation due to less grazing, it stabilized the river banks. (How Wolves Changed Rivers)

With the return of gray wolves to Yellowstone, the impact is enormous. Not only on biodiversity but the gray wolf is having an economic impact. The elk and deer populations are in balance. Wolves are thriving. Beavers have returned and their numbers are increasing. Aspen and willows are healthy. Tourism and revenue for the park has increased. And all of it is positive. The wolves are there to stay in Yellowstone National Park for many years to come. There can be no argument that there is a *Positive Impact on Gray Wolf Restoration in Yellowstone National Park*. We have learned not to mess with Mother Nature as there are many negative consequences when we do.

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