Wolves in Yellowstone National Park

Authors: Kiera Crowe-Pettersson, Cole Larsen, Paul Lee, Kade Philps

Created: 2015

Introduction

Yellowstone National Park is a federal park in the United States that covers portions of Idaho, Wyoming and Montana. Wolves were eradicated from the park in the early 1900s; decades later they received protection under the Endangered Species Act and were subsequently reintroduced to the park in an attempt to restore the natural balance of the ecosystem (Wolves in Yellowstone, 2015). Hunters and farmers near the park were affected by the reintroduction of wolves, as was the park ecosystem. Even in recognising that the wolves in Yellowstone are incredibly important to the stability of the ecosystem as apex predators, the cracks in the reintroduction solution go to show our lack of understanding in the complexity of ecosystems.

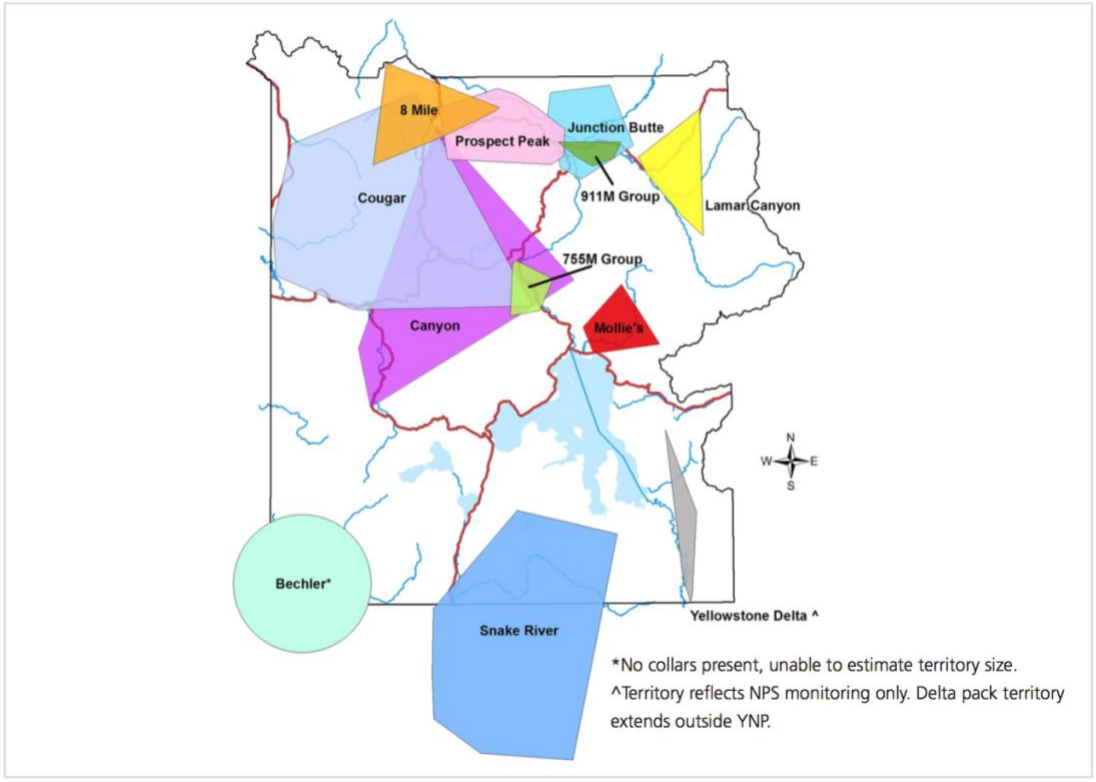

Figure 1 Pack distributions within Yellowstone National Park in 2014, some packs hold territory that extends outside the border of Yellowstone and some packs have left the park all together. (Smith et al. 2015)

Stakeholders

There are numerous stakeholders in the process. The National Park Service has used the wolf as a symbol for conservation, and is looking for a positive outcome. Native Americans in the area are heavily invested in the situation, as wolves are culturally important to their communities. Many ranchers and hunters see wolves as pests that prey on their livestock and nearby big game, and seek better management of wolves with regulations that benefit their livelihood. This contrast in values and the large scientific uncertainty make this case a wicked problem.

Framing the Issue

The primary issue in this scenario is the lack of scientific understanding of wolf reintroduction and how it affects the park's ecosystem, as it creates difficulty for policymakers to agree on decisions moving forward. The secondary problem is the systematic negative perception of the wolves as bad, and the resulting resistance to the reintroduction process. Local hunters feel as though their voices aren't being heard and have a negative perception of wolf reintroduction (Hogberg, et al. 2013), making it challenging to gain public support. In addition, nearby farmers have received the process poorly as wolves prey on their livestock and they view their compensation as insufficient. Thirdly, the general lack of public understanding of wolf reintroduction hinders the process. The lack of education plays a role in the negative attitudes of hunters and farmers in the area, as they haven't been provided with a complete understanding of the importance of apex predators in the ecosystem. (* see attached mindmap)

Wolf Distribution in States Surrounding Yellowstone National Park

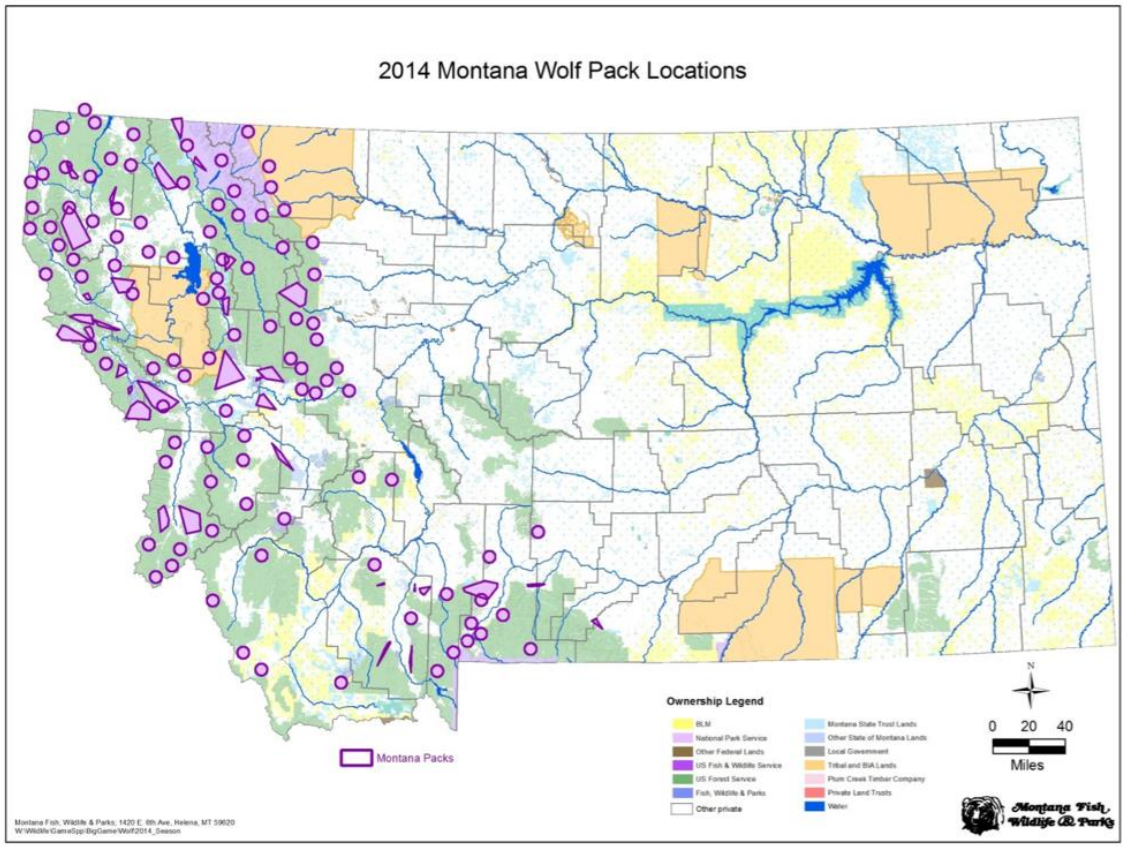

Figure 2 Montana Fish, Wildlife & Parks, 2014

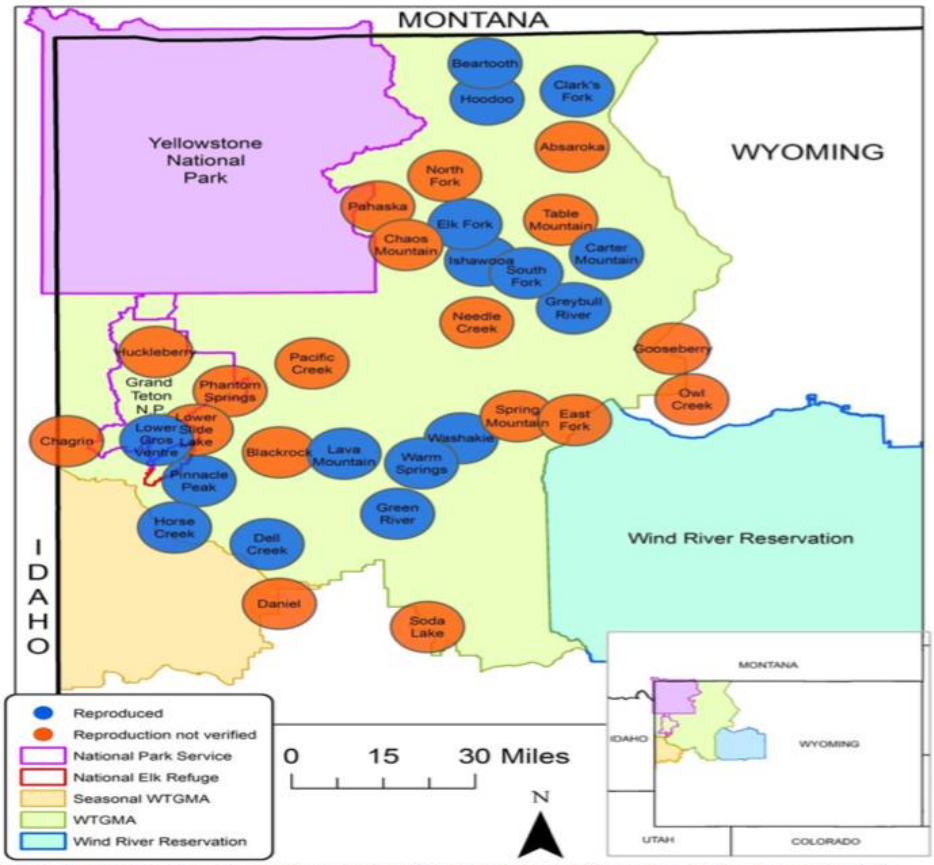

Figure 1. Territory centroids and reproductive status of confirmed wolf packs present in Wyoming outside Yellowstone National Park and the Wind River Reservation on September 23, 2014. Wolf packs were considered to have successfully reproduced (blue centroids) if they contained ≥2 pups of the year on September 23, 2014, otherwise they were considered to have not successfully reproduced or reproduction was unverified (orange centroids). White areas of the map within the Wyoming state boundary depict areas of primarily unsuitable habitat where wolves are designated as predatory animals year-round.

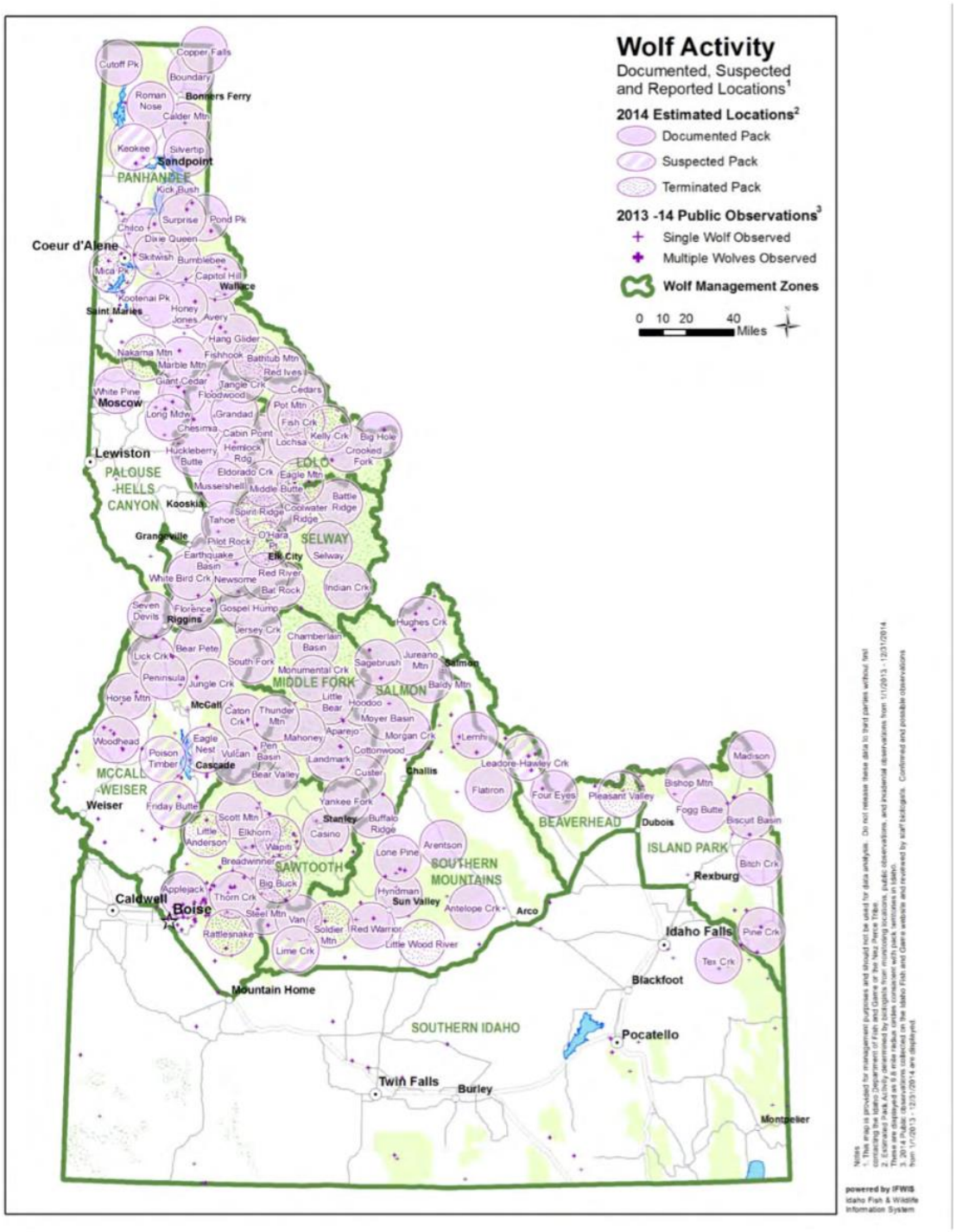

Figure 3 Wyoming Game and Fish Department et al. 2014.

Governance Framework

The intersection of various levels of government, as well as cultural values, all play a role in how wolves are perceived and treated. Long seen as threats to both livestock and game, wolves were methodically hunted with little thought as to how their removal would alter the

environment. Following that, several acts seeking to address the problematic relationship between man and animal, and man and nature (The Animal Damage Control Act of 1931, and the Wilderness Act of 1964) furthered the push to monitor this relationship through federal leadership. A decade later, President Nixon enacted the Endangered Species Act of 1973. It was administered by the U.S Fish and Wildlife Services, and listed the Northern Rocky Mountain Grey Wolf as "Endangered." The *Northern Rocky Mountain Wolf Recovery Plan,* published by the U.S Fish and Wildlife Services in 1987, marked the final push to ensure the restoration of the Grey Wolf to the area. A pilot reintroduction was launched in Yellowstone in 1995 with the hopes of restoring ecosystem balance but current research fails to present a clear biological narrative (NPS, 2015). As the population recovered, packs began to migrate out of Yellowstone and into the surrounding states of Montana, Wyoming, and Idaho leading to a suite of governance issues. In regards to the reintroduction of wolves in Yellowstone, the system of governance depends on the relationship between the U.S Department of the Interior and the federal bodies of the U.S Fish and Wildlife Foundation (USFWF) and the National Park Service (NPS). Locals interacting with the wolves have little say or influence over the decision process. Wyoming presents an example of the state versus federal nature of wolf governance, after official delisting in 2012 wolves were once again placed under USFWS protection due to concern over poor management (Defenders of Wildlife, 2014 & Wyoming Fish and Game Department, 2014).

The Endangered Species Act has international effects as it regulates trade of animals and plants. Under the National Park Service, wolves in Yellowstone National Park cannot be hunted for trophies or otherwise. On a macro scale the international governing bodies of the World Wildlife Foundation (WWF), the International Union for the Conservation of Nature (IUCN), and the United Nations Environmental Programme (UNEP) make decisions and policies that affect the animals, and the protection of the animals on the endangered species list. These changes have the potential to influence decisions made by the USFWF, though there is no evidence to show any influence that lead to the protection and recovery of the Northern Rocky Mountain Grey Wolf. On an international scale, there is currently no consistent law on the treatment of endangered animals, what constitutes as an endangered animal, and methods of reintroduction into ecosystems. Part of this is due to the independent nature of each situation, and how different cultures value animals for different reasons.

The main examples of cultural governance are those of Native American Tribes and nonprofit conservation groups. Native American tribes have independent control over wolf populations on their lands in delisted states (ILWOC, 2002, Sime *et al,* 2010, & WGFC, 2012). Defenders of Wildlife is a non-profit public organization committed to raising awareness around wolf conservation, lobbying for increased protection and exposes what they feel to be cases of poor management. The organization has compensated livestock owners in Montana and Idaho who have lost animals to predation (DOW, 2015). However, the organization does not have power to manage wolves or directly impact policy.

Moving Forward

1. Increased Research

The reintroduction of wolves to Yellowstone National Park exemplifies how poor scientific consensus can create a wicked problem. The situation demonstrates the importance of understanding an ecosystem before changes are made; this applies to both the removal and

restoration of species. We propose more informed policies with increased public input. Also, the level of scientific knowledge regarding wolf effects must improve.

Yellowstone maintains extensive data sets regarding the ecosystem shifts in response to wolf reintroduction. While neighbouring states keep tight watch over populations, little research exists about the impacts of wolves outside the park. Population numbers are well known due to both state and civilian monitoring but this is not the same as tracking ecosystem changes. The data that is available is almost entirely from within the park, but is often conflicting. This makes it incredibly difficult to extrapolate appropriate management to animals outside the park based on supposed ecological merit (Gertz, 2014). Management numbers are in many ways set to manage wolf-human interactions, in order to set more ecologically significant numbers it is important to understand how the wolves will equilibrate in the new habitats. Ecosystems pushed towards alternate stable states in their absence so it cannot be assumed that returning wolves will restore the land to historical conditions. The uncertainty surrounding the wolves within Yellowstone, a well studied and relatively confined region, exemplifies this.

To reduce the scientific uncertainty regarding wolf recolonization we propose a focused review of park data with the intent of removing bias and extending ecological monitoring to the surrounding areas with the goal of tracing widespread ecosystem effects (Mech, 2012). This will be a considerable undertaking because there is less long-term data for habitat outside the park and wolves have spread to cover a wide geographical area. A concerted effort on behalf of the US Fish and Wildlife Service in conjunction with state and local governments will be essential to achieving this goal. The nature of compiling long-term data means any meaningful conclusions will be far down the road and that in the interim, management will need to proceed as normal in order to prevent population regression. Once wolf ecology is better understood, areas for conservation can be targeted and regions with little human contact can be less heavily regulated to allow for equilibration. It is clear that monitoring frameworks exist because many packs are tracked on state land, adding the work of researchers and ecologists to an already existing program will be work-intensive but feasible (ILWOC, 2002 & MFWP, 2015).

2. Increased Public Input

Another large issue when it comes to wolf management is the public's lack of input in decision making. The lack of input from nearby residents of the park generates ill will towards wolves. In a study done by Kellert (1985), positive attitudes associated with wolves were from higher income individuals living in urban areas, while negative attitudes were from livestock producers and rural residents. These residents cited loss of livestock and pets, as well as a reduction in big game populations as major reasons to dislike wolves. Generally, people with positive attitudes towards wolves were those who had the least interactions with them (Fritts et al., 1995). One way to combat this resentment from affected locals is to have policymakers hold open forums in rural areas. Local residents have an opportunity to have their voices heard and state their input.

Another dimension to the lack of public input is the discrepancy between federal and state management. In order for the state to manage wolves, wolves must be delisted from the Endangered Species Act and the state must have an adequate plan outlining how they are going to monitor them. Following wolf delisting, states are required to submit annual reports of wolf populations for 5 years. Currently, Montana and Idaho are in control of their wolf management, but Wyoming is not (Wolves in Yellowstone, 2015). Giving states more control over wolf populations allows for the public's input to be incorporated into plans more

effectively, as opposed to regulation being left to the federal government. Maintaining these regulations, while also dedicating more staff to manage state populations would benefit the ecosystems.

3. Increased Public Education

Education on the role of wolves as apex predators in the ecosystem would allow for a more tolerant outlook by those affected by the wolves (and those who want the population levels decreased). The systematic negative perception of wolves as harmful was much of the premise for the initial extirpation of the wolves in Yellowstone National Park. It would seem logical that by remedying this view, one would remedy the current negative perception of wolves. In addition to this negative perception, there is also little understanding of what it takes to balance an ecosystem. Its complexity lies in the dynamics between wolves, elks, beavers and young willows (which are a main food source for both elks and beavers – a competition which the elks are winning). In addition, education of the persistence of the problem would bring transparency to the operation – the initial solution was thought to be clear but wasn't. Thus the instabilities that were caused by the removal of the wolves are still present as the issues with the elks, beavers and young willow trees still remain. Although huge strides have been taken to overcome the instabilities that resulted from the initial removal of the wolves in Yellowstone, it has become obvious that there is no immediate solution. This ought to be communicated in order to give those affected a proper understanding of the issue at hand. Even if the strides taken to inform communities about the role and value of the wolf does not sway negative opinions, the dialogue would still be brought to a more informed level – applying logic and reason rather than emotion. This dialogue and education about wolves could present as a proxy for a better understanding on wider environmental concerns.

4. Changes in Compensation

As mentioned, a core issue that has developed as a response to the reintroduction of wolves in Yellowstone National Park is the relationship between local stakeholders and larger governing bodies. The majority of ill perception toward the wolves is from local farmers and hunters who are directly affected by a decrease in big game and predation on livestock (Kellert, 1985). In order to mitigate issues between localities and the federal government, as well as their states, we suggest coordination for game and livestock protection together with improved, and more punctual, payouts for depredation.

Multiple components play into the negative viewpoint held by livestock producers affected by depredation, including financial losses and unwanted stressors (Bangs et al., 1998, Bangs and Shivik, 2001 & Naughton-Treves et al., 2003). A common means to alleviate the impact of livestock depredation is through compensation programs. The construction of such systems can have a positive effect on both the perception of the wolf and the state/producer relationship. This is directly reflected by the success of reimbursement programs in and around Yellowstone. In cases where the monetary value is significant, lack of immediate response can inhibit the positive effects of the program (Muhly & Mousiani. 2009).

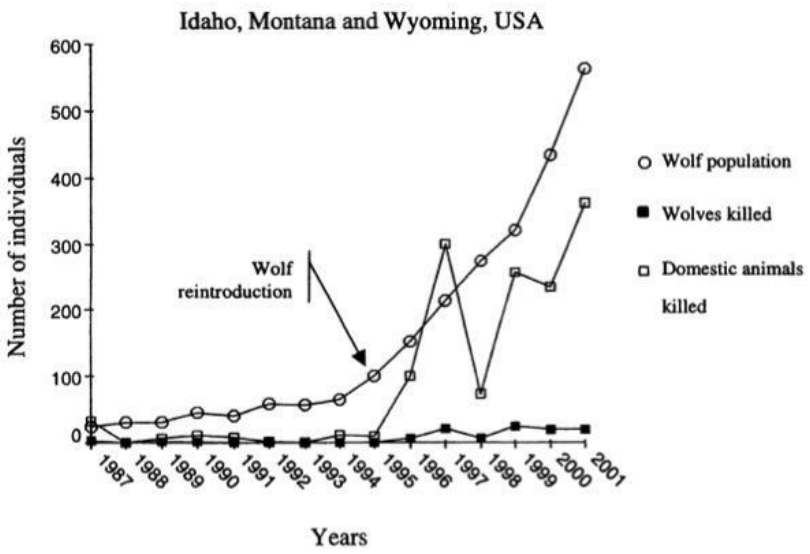

Figure 5. Trends in wolf depredation and wolves killed by government authorities to reduce depredation (Musiani et al. 2003).

The second principal element when trying to ameliorate the issues between localities and larger governing bodies is game and livestock protection. As opposed to controlling behaviors of an apex predator, systems that attempt to safeguard game and livestock from depredation pose potential for mending the negative perceptions towards the gray wolf. In the past, an effective method of protection for both game and livestock has been through lethal control (Bangs & Shivik. 2001). However, these methods are not conducive for wolf recovery since it can result in a decline of breeding individuals (Bangs & Shivik. 2001). Unfortunately, there is a widespread belief in many areas that all ungulate and hunting harvest depreciation can be attributed to predation by wolves, only worsening illegal killings (Bangs et al., 2004).

To reduce the position held by producers subject to livestock depredation, we propose a system of reimbursement that focuses not only on appropriate compensation but also more timely responses. This structure may begin to correct the negative views producers tend to hold towards government organizations (Fourli, 1999 & Montag, 2003). Controlling the speed at which a federal organization reimburses an individual could pose a problematic scheme. However, it is a necessary action in mending government-local relations. Increasing protection of game and livestock without using lethal action is another significant challenge. The proposed action is the use of government-funded programs to ensure proper tracking and protection of both game and livestock. This can be done through extended wolf monitoring in high ungulate depredation zones and security measures in livestock depredation areas. Installation of Fladry gates around livestock has proved to be effective when analyzing areas where other prey, such as ungulate or livestock, will not be targeted due to the protection of another group of livestock (Musiani, et al. 2003).

Conclusion

The governance of wolves is complicated as they are mobile animals that ignore human legislative boundaries. A fluid solution is required for a fluid problem and our proposal calls for more involvement on all fronts: increased scientific input, public influence, with more proactive government compensation and education (Melissa, 2005). By creating a more informed atmosphere it will be possible to tailor plans for different regions that better suit the interests of both wolves and humans.

References

Peer Reviewed Articles

Bangs, E., Shivik, J. (2001). *Managing wolf conflict with livestock in the Northwestern United States.* Carnivore Damage Prevention News, 3, 2-5.

Bangs, E.E., Fontaine, J.A., Jimenez, M.D., Meier, T.J., Bradley, E.H., Niemeyer, C.C., Smith, D.W., Mack, C.M., Asher, V., Oakleaf, J.K. (2004), *Managing wolf/human conflict in the northwestern United States.* People and Wildlife: Coexistence or Conflict?, Cambridge University Press, Cambridge, United Kingdom, 340–356.

Fritts, S. H., Stephenson, R.O., Hayes, R. D., and Boitani, L. (2003). *Wolves and humans*. In Wolves: Behavior, ecology and conservation, eds. L. D. Mech, and L. Boitani, 289–316.

Marris, E. (2014). Rethinking predators: Legend of the wolf. *Nature, 507*, 158-160.

Mech, D.L. (2012). *Is science in danger of sanctifying the wolf?* Biological Conservation, 150(1), 143-149. doi: 10.1016/j.biocon.2012.03.003

Kellert, S. R. (1985). *Public perceptions of predators, particularly the wolf and coyote*. *Biological Conservation.* 31:167–89.

Smith, D. (2002). *Wolves and human communities: biology, politics, and ethics*. Journal of Mammalogy, 83, 251-252.

Musiani, M., Mamo, C., Boitani, L., Callaghan, C., Gates, C. C., Mattei, L., Visalberghi, E., Breck, S., Volpi, G. (2003), *Wolf Depredation Trends and the Use of Fladry Barriers to Protect Livestock in Western North America*. Conservation Biology, 17: 1538–1547. doi: 10.1111/j.1523-1739.2003.00063.x

Muhly, B. T., Musiani, M. (2009). *Livestock depredation by wolves and the ranching economy in the Northwestern U.S.* Ecological Economics, 68(8-9), 2439-2450.

Government Documentation

Endangered Species Act of 1973. (1973). Retrieved October 11, 2015.

Idaho Department of Fish and Game & Nez Perce Tribe (2015). *2014 Idaho wolf monitoring report.* Idaho Department of Fish and Game, available from https://fishandgame.idaho.gov/public/wildlife/wolves/

Idaho Legislative Wolf Oversight Committee. (2002). *Idaho wolf conservation and management plan.* Retrieved from http://fishandgame.idaho.gov/public/wildlife/wolves/2

Montana Fish, Wildlife & Parks. (2015). *Wolf program.* Available from http://fwp.mt.gov/fishAndWildlife/management/wolf/

Smith, D., D. Stahler, E. Stahler, M. Metz, K. Cassidy, B. Cassidy, and R. McIntyre. (2015). *Yellowstone National Park wolf project annual report 2014.* Retrieved from http://www.nps.gov/yell/learn/nature/wolfmgnt.html

U.S. Fish and Wildlife Service. (1987). *Northern Rocky Mountain Wolf Recovery Plan.* Retrieved October 10, 2015.

Wyoming Game and Fish Department, National Park Service, USDA-APHIS-Wildlife Services, and U.S. Fish and Wildlife Service. (2015). *2014 Wyoming gray wolf population monitoring and management interim report: January 1, 2014 through September 23, 2014.* Available from https://wgfd.wyo.gov/Wildlife-in-Wyoming/Large-Carnivore/Wolves-in-Wyoming

Popular Media

Gertz, E. (2014). *Has the reintroduction of wolves really saved Yellowstone?* Retrieved from http://www.popsci.com/article/science/have-wolves-really-saved-yellowstone

Lowry, William R. *Repairing Paradise the Restoration of Nature in America's National Parks*. Washington, D.C.: Brookings Institution, 2009. 208-211. Print.

Melissa, B. (2005). *Restoration or destruction: the controversy over wolf reintroduction.* Retrieved from http://www.jyi.org/issue/restoration-or-destruction-the-controversy-over-wolf-reintroduction/

Middleton, A. (2014). *Is the wolf a real American hero?* Retrieved from http://www.nytimes.com/2014/03/10/opinion/is-the-wolf-a-real-american-hero.html?_r=4

Data Sources

Hogberg, J., Treves, A., Shaw, B., & Naughton, L. (2013). Public Attitudes towards Wolves in Wisconsin. Retrieved October 11, 2015.

National Park Service. (1995-2013). Annual Wolf Project Reports, *Yellowstone National Park*. Retrieved October 10, 2015.

Cover image is public domain, can be found at: https://pixabay.com/en/wolves-wolf-pack-canis-lupus-221304/

- Previous
-

Site Registration

If you want to add yourself to this blog, please log in.

The Department of Geography - Environment and Sustainability Program
Vancouver Campus
1984 West Mall
Vancouver, BC Canada V6T 1Z2
Tel 604 822 2663
Website www.geog.ubc.ca/
Back to top