***Wolves in Europe:***

Why are there more wolves in Europe than the continental US, despite higher human density and fewer protected areas?

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The answer to the question: “*why are there more wolves in Europe than the continental US, despite higher human density and fewer protected areas?”* is complex and multi-faceted. Historically, wolves have played an important role in human evolution – first acting as competition for food or as a dangerous threat to life or livestock, but as humans entered the Anthropocene, wolf populations were reduced en masse to appease the public’s distaste for large carnivores. The first bounty for the hunting of wolves in the US was instituted in 1630, in the colony of Massachusetts, followed by hundreds of years of further devastation (Austin Hoffman and Annie White n.d.). Even renowned conservationist Theodore Roosevelt declared the wolf “the beast of waste and desolation”, calling for their complete eradication (Austin Hoffman and Annie White n.d.). Similarly, in Europe, wolves were hunted to the brink of extinction by the first half of the twentieth century, with small, isolated populations remaining (Rewilding Europe 2022).

Wolves are highly adaptable animals which can occupy the status of keystone species in a number of different environments. In North America, there are three dominant subspecies of wolf – the Eastern Wolf (*Canis lupus lycaon*), the Red Wolf (*Canis rufus*), and the Gray Wolf (*Canis lupus*). Their range extends the full span of North America, including Mexico and northern Canada (Burke 2011). They are opportunistic, social pack predators which feed on a wide range of prey, including elk, deer, moose, fish, rodents, birds, and livestock. Most weigh between 60-120 pounds and vary in appearance based on environmental and evolutionary factors (Burke 2011). In Europe, there are five major subspecies of wolf, of which the Eurasian wolf is the most widespread (Rewilding Europe 2022). Acting as a predatory keystone species, the presence of wolves in an ecosystem changes the behaviors of animals living in that ecosystem, and subsequently changes the vegetation biodiversity through trickle-down trophic impacts. When wolves were removed from both Europe and the US, the environment found a new equilibrium without a keystone predator – with higher prey animal densities and disproportionate vegetation distribution. Thus, by reintroducing wolves to an ecosystem they had been historically removed from sets in place a chain reaction to restore the natural conditions of that ecosystem. This effect is no better exemplified than in Yellowstone National Park. Since reintroduction, the presence and success of wolves in Yellowstone has set in place a more natural trophic cascade, with large predators better modulating large ungulate populations and restoring the ecosystem to a more complex and diverse state (Boyce 2018). The success of the Yellowstone reintroduction can be attributed to a great deal of public support. Since Yellowstone is already a National Park managed by the Federal Government and is protected from permanent human occupation, the wolves are distanced far from any agricultural or livestock, and high densities of humans, it was much more palatable for the general public to sign off on than if the wolves were to be reintroduced to their natural habitat near a larger metropolitan or even rural area. Similar effects have been seen in Europe since conservation efforts began in the second half of the twentieth century, with wolf populations currently reaching around 13,000 individuals, not including Russia (“Europe | International Wolf Center” 2013).

Wolf recovery in Europe has been more proactive for a number of reasons. For years, wolves were listed throughout the European Union as a protected species and because of that, the killing of wolves was made illegal. Different countries in Europe each have their own policies for the management of wolves as well, which can be good as it allows each individual nation to dictate how wolves are managed in their country, however since wolves are known to travel long distances, the invisible borders between countries do not protect a wolf crossing into unfriendly territory. The Netherlands had not seen a wolf for over 150 years, but in 2015 one individual crossed through from Germany, and this lack of interaction for so long has led the nation to be unprepared for any larger wolf population management. Norway is sparsely populated and thus less human-wolf interaction occurs than in other nations, however there exists a deep social conflict between rural livestock farmers and urban groups over wolf conservation. Romania can be seen as an example of successful wolf conservation – after wolves had been hunted extensively during the Communist era, protection of the species began in the 1990’s and continued with a complete hunting ban in 2016, resulting in a population of 2,500-3,000 wolves now living in the Romanian Carpathian Mountains with minimal human conflict. Romania has been successful at limiting conflict because of its mountainous and rugged geography as well as sweeping management efforts and effective use of electric fences and sheepdogs (Ellen de Wolf 2021). It should be noted that the vast majority of Europe is suitable habitat for wolves to thrive.

After years of sweeping public support for wolf conservation, rising wolf populations have directly contributed to the increasing amount of conflict between wolves and humans. Differences in management approaches between countries in Europe have resulted in a redistribution of wolves into more favorable countries and less in countries which have not banned their hunting. Movements in November of 2022 in the European Parliament have called for a downgrade on the protection status of wolves in order to aid the livestock sector, with vast public support. In France alone, over 10,000 sheep are killed by wolves annually, packing a massive economic hit to livestock farmers. Supporters of the removal of protection status argue that something must be done to stop the problem of livestock predation, likely by culling the population, while conservationist-opponents argue in favor of the ecological benefits brought by wolves (Foote 2022).

Conservation efforts have been very different in the United States than in Europe. Reintroduction efforts have been made on a small scale with Yellowstone being the most widely known and supported. The geography of the United States however is significantly different than that of Europe, with vast areas of desert being widely inhabitable for wolves and large swaths of wild mountains and plains. There has been overall public disapproval for reintroduction efforts in regions within proximity to humans, with Idaho, Montana, Wyoming, and Wisconsin being examples of states where public sentiment has affected wolf management to the point where wolf trapping and hunting has been reestablished (“America’s New War on Wolves and Why It Must Be Stopped” 2022). Further politicization of the issue of coexistence with wolves has led to widespread support of wolf reduction. This point is substantiated from an interview conducted with Joseph Hinton, PhD, Senior Research Scientist at the Wolf Conservation Center. When asked, “*Why do you think there are more wolves in Europe vs. the US?*”, Dr. Hinton answered by explaining how there are lower population thresholds set for wolves in the US, citing a minimum recovery goal of 150 wolves in Montana, while Spain has about 1,000 more wolves than Wyoming and Montana combined since it has set a higher population threshold (Hinton 2022).

With more wolves in Europe than in the US (13,000+(excluding Russia):5,500 (excluding Alaska)), and considering that parts of Europe have a higher population density of humans, there are subsequently far more interactions between the two (“United States | International Wolf Center” 2013). Management in Europe has been mostly effective in fostering a peaceful coexistence between humans and wolves, with exceptions stemming mostly from livestock farmers who had lost their herd. Meanwhile in the US, public sentiment has been politicized to the point where voters antagonize wolves based along party lines, and this sentiment has resulted in a turn back to the management practices of the late 1800’s in some states. Dr. Hinton mentioned that the US and Europe are similar in how they conduct the science and research trends involved in wolf conservation, however they differ in how that science is implemented into policies, with the US federal government’s ability to supersede states’ rights coupled with limited state autonomy, while individual European countries have more independence from any larger governing body. (Hinton 2022).

There have been many potential solutions to reduce human and wolf conflict, of which some are greatly effective. Studies have shown that wolves prefer to eat wild game animals over livestock even when livestock is widely available (Guimarães et al. 2022). It can be then concluded that predation on livestock is likely a result of a lack of the wolves’ natural prey, and a management system that boosts prey species populations could help to improve human-wolf interactions. Additionally, trained guarding sheepdogs have proved an effective means of preventing wolf attacks on livestock. To adequately protect a herd, an optimum number of sheepdogs must be maintained to constantly monitor the animals, depending on the size of the herd. Larger farms tend to have larger losses from predation, however it is recommended to assist smaller farms adequately as well, since the per-capita loss of each animal for a smaller farmer is a larger loss for them, and will further galvanize public sentiment against wolves (Iliopoulos et al. 2009). Education and outreach for the public can help to reduce fears and anxieties about wolves, as well as successful actions taken by a government, and Europe has been more effective at doing those things than the US has.

If one had the intention on increasing the population of wolves in the United States, they should begin by shifting the public’s opinion in favor of wolf conservation. Transparency on their ecology and feeding preferences should be discussed, as well as education on the important role that wolves play in a dynamic and natural ecosystem. When asked, “*What limitations in the US do you think have impacted wolf populations?*”, Dr. Hinton suggested that anthropogenic mortality is the biggest limiting factor for wolves in the US, and that is a result of “institutional hostility towards wolves. In other words, bad politics that influences resource management” (Hinton 2022). The US has the resources available to change the public’s opinion on wolf conservation, which could greatly restore huge areas of the country to a more natural state, it is only restricted by the policies dictated by the current political party in power. Throughout the years since wolves were reintroduced to the US, changes in policy have greatly affected wolf populations. As of 2017, wolves had been delisted from the Endangered Species Act (ESA) in Wyoming, which now allows for year-round killing over 85% of the state at any time, by virtually any means. Idaho has implemented bounties as high as $2,000 for wolves and is planning to reduce the wolf population in the state by 90%. Idaho has generated over $1 million from the hunting of wolves so far (Ted Williams 2022). Separate from livestock farmers, hunters in the US have become increasingly anti-wolf as they see the wolves as killing too many of the prey species they like to hunt. This however, is backwards logic since they believe they are acting as the ”natural predator” for game species, meanwhile they could actually have a natural predator modulate game species populations – but that takes the “hunting/sporting” aspect away from the hunter. With the ebb and flow of political party dominance, policies have been reduced and restored, with Colorado acting as a prime example. Colorado has historically resisted wolf reintroduction, but on November 3, 2020, voters approved reintroduction and the state must have a plan in place by December 31, 2023 (Ted Williams 2022).

Overall, effective management practices coupled with majority public support, and reduction of human-wolf conflict have all been cornerstones of why Europe has been so successful at restoring wolf populations, despite less-conducive conditions than in the US. Politicization on the threat of wolves to the general public has been the greatest threat to wolf reintroduction efforts in the US and stands as the largest obstacle before further conservation can be done.

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