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Co-existence between Humans and Wolves: A New Challenge for the Old World

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ABSTRACT: After centuries of persecution, European wolf populations are recovering across many areas due to favorable legislation and the rise of the “rewilding” movement over the past few decades. The central mechanism triggering the rewilding of Europe was the European Union Habitat Directive, approved in May of 1992. The directive classifies the wolf as a strictly protected species and all EU-countries have implemented the directive in their legislation. Since the 1990’s, the number of wolves in Europe has steadily increased and the total number of wolves, excluding Russia, Belarus and Ukraine, exceeds 12,000 wolves. At the same time conflicts between farmers, wolf protectors and authorities are becoming more frequent. Wolves living in Central Europe, Finland and Scandinavia must cope with the fact that there are human settlements throughout their habitat. This results in a strong habituation to humans and a growing number of attacks against cattle and sheep under the cover of darkness as well during dawn, dusk, and night. The appearance of wolves in settled areas in broad daylight seems to be more and more the rule rather than the exception. While authorities explain this as being a part of the wolf’s normal behavior, human tolerance in areas where wolves return is rapidly lowering. Wolves’ depredation on livestock, and especially a behavior called surplus killing, has resulted in several clashes between farmers and authorities in France and Italy. Surplus killing is a behavior exhibited by wolves in which they kill more prey than they are able to consume and then abandon the remainder. Incidents from Southern Europe show that a single wolf pack may kill hundreds of sheep in one single attack. In this paper I will review the implications of human-wolf coexistence in settled areas in different parts of Europe. I will highlight a number of problems experienced as well as solutions and their outcome.

KEY WORDS: co-existence, habituation, human safety, livestock, rewilding, wolves

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INTRODUCTION

Strong forces want to make Europe a wilder place to live. The European Union is the coordinating force with its goals for large carnivore conservation, as stated in the Habitats Directive and the Bern Convention (EU Commission 2007a). Loosely coupled with the EU, we find organizations such as the LCIE (Large Carnivore Initiative for Europe). Since 2010, the LCIE has held the official status as a Specialist Group within the Species Survival Commission (SSC) of the International Union for the Conservation of Nature (IUCN).

In this paper I analyze the introduction of wolves into Finland, Scandinavia, and Western Europe. My intention is to highlight some of the problems related to the co-existence between humans and wolves.

DISCUSSION

Stakeholders and Attitudes

Large carnivore conservation involves stakeholders as livestock producers, sheep and reindeer herders, hunters, rural people, and the large urban public. These groups are influenced by wolves in different ways, and in many cases the differences are the foundation of conflict between these groups. Experience has shown that people with the most positive attitudes toward wolves are those with the least experience.

Williams et al. analyzed peoples’ attitudes toward wolves and found that 51% thought positively of them and 60% supported wolf restoration. Furthermore, they notice that attitudes toward wolves had a negative correlation with age, rural residence, and ranching and farming occupations, and a positive correlation with education and income. They expect that progress in education and urbanization will lead to increasingly

positive attitudes toward wolves, over time (Williams et al. 2002).

European Union Enters the Scene

The EU Commission is conducting a wide range of activities to reduce the conflict surrounding large carnivores, mostly efforts to increase the tolerance of wolves among residents in rural areas as well as livestock owners. To encourage the adoption of best practices and promote human co-existence with large carnivores, the EU Commission has initiated a number of projects. The largest mechanism was the LIFE program (EU Commission 2013).

Despite activities initiated by the EU Commission, the return of the wolves has demonstrated a need to better protect livestock and compensate for any damage. Luigi Boitani, a biologist at Rome’s Sapienza University and the IUCN’s wolf expert says, “What matters is their conflict with humans and the damage caused. It is the single sheep a farmer might lose” (Tamma 2017).

Habituation to humans and possible hybridization are changing wolves’ behaviors, and they continue spreading from the pastures toward densely populated urban areas and large cities like Paris and Rome.

At the moment, the EU’s focus on the “rewilding” process is concentrated on national legislations, management plans, and monitoring. Less attention is given to livestock, human fear, and security. This is rapidly leading to a situation where the main issue turns from conservation to protecting human security.

Wolf Management and Co-existence

National Wolf Population Management Plans form the cornerstone of the member states’ wolf management. The

plans are supposed to act as a model for the local people to follow and should also ensure a viable wolf population.

In Finland, the plan's drafting process was made open and interactive, making it possible for Finnish citizens to participate in preparing the actions and to follow the progression of the drafting process. The development procedure involved 30 public hearings arranged in different locations in Finland, and a total of 1,617 people attended to share views on how to manage the Finnish wolf population (Valtioneuvosto 2015).

As a result, 61 comments were received. "They all considered it important that the drafting of a management plan was based on international obligations, national characteristics and the hearing of local people, regional actors and national stakeholder groups, and taking their views into account" (Valtioneuvosto 2015).

For me, having been involved with the development of the Wolf Population Management Plan for Finland, it was clear from the beginning that all the discussions with local organizations were attributed by our authorities using two phrases: "You have to" and "We don't."

I submitted one of the comments representing 571 hunters and 140 hunting organizations. None of our proposals and amendments were considered by the authorities in the final Plan. The Wolf Population Management Plan was approved on January 22, 2015. It sets out a total of 59 measures and 9 different projects, including the establishment of wolf territory cooperation groups; the provision of more information about the wolf; and the development of networks of large-carnivore contact persons (Valtioneuvosto 2015).

The Wolf Population Management Plans also define what the EU calls "favorable conservation status" (FCS) "Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis" (EU Commission 2016). However, there was no flexibility in the pathways defined by the Wolf Population Management Plan, which caused practical actions to diverge and the parties to go separate ways.

During 16 - 20 December, 2017, 555 hunters counted the number of large carnivores in an 8,000 km² area south of the city of Vasa in Western Finland, and they identified 44 wolves (Holmström 2017). The official number of wolves in that area was estimated to be nine. The official number was not corrected, but instead the hunters' efforts were dismissed by the authorities. Similar operations have been carried out in other parts of Finland, and the difference in wolf population estimates is one of the foundations of conflict between authorities and people living in rural areas.

As long as the authorities claim that "favorable conservation status" has not been reached, there is no possibility to cull wolves, but the population keeps growing and wolves keep roaming around residential areas. The authorities, in turn, announce that the wolf population is declining due to poaching.

Co-existence and Poaching

Is the illegal killing of wolves, or poaching, threatening the viability of the European wolf population?

The question is two-fold. David Mech (2017) writes, "When a wolf population is low in numbers or distribution, human limitations by hunting, trapping, poaching, or livestock-depredation control can be effective. However, once a wolf population becomes well established and widely distributed, such techniques have limited impact." This theory is supported by Bernt Lindqvist in his paper "Varg och vargjakt" ("Wolves and wolf hunting") (Lindqvist 2008).

Wolf poaching is a popular research topic in wolf conservation, although the impact of poaching on the wolf population is minimal. Wolves' widespread range and stable population growth mean that the species does not meet any of the criteria for the "threatened" categories (IUCN 2017). Research on wolf poaching (Liberg et al. 2012; Suutarinen and Kojola 2017) focuses on statistical methods in their efforts to estimate the number of wolves killed by poachers. However, the reliability of poaching research is complicated due to the difficulty of documenting true intentions to poach (St. John et al. 2012).

The wolf is by far the most difficult mammal to hunt (Lindqvist 2008). My experiences in Yakutsk in 2016 support Lindqvist's reasoning. Two months before our excursion to Yakutsk, we ordered 20 wolf carcasses from local hunters. They succeeded in collecting 19 of 20 wolves from January 15 to March 18. They could not reach the goal even though the wolf population in Yakutsk is somewhere between 5,000 and 10,000 and the hunters were professionals, making a living off wolf hunting. Poaching is by no means an easy task for a single poacher; it requires tens of hunters and several dogs to be successful.

If poaching is widespread, we should ask why people living in rural areas kill wolves illegally? A noticeable theory is that the efforts to increase tolerance of wolves among the rural population fails as the authorities cannot understand the situation where habituated wolves dwell on suburban roads and sleep in the yards. For families living among all these wolves, there is just one solution - shoot, shovel, and shut up. The Finnish Food Safety Authority (EVIRA) investigates all wolves that have been shot or found dead. During 2001-2014, they performed autopsies on 81 wolves, 14 of which were killed illegally, and wounds from rounds or shotgun pellets were found in seven wolves (EVIRA 2017).

My own research revealed small, capsulated shotgun pellets in two of five randomly selected wolves. One pellet was found in the intervertebral discs of one wolf, and another pellet in the elbow of the other. Both pellets were less than 3 mm in diameter. Small shotgun pellets found in wolves can be the result of an effort to chase away wolves from yards rather than an actual attempt to illegally kill them. Most shotgun owners are hunters who know that small pellets may hurt wolves, but do not kill them unless shot from a distance of less than 20 meters.

Wolves and Livestock in Europe

The EU's efforts to increase tolerance of wolves among livestock owners is currently the most expensive wolf conservation activity. This makes farmers and

hunters the most important stakeholder groups in wolf conservation. They are also the only group consistently opposing wolf conservation across the core areas.

Farmers usually accept sporadic losses of free-ranging sheep or cattle, but wolves exhibit a behavior called “surplus killing,” a common behavior where they kill more prey than they consume and abandon the remainder. Such activity has been reported by sheep breeders in Southern Europe and reindeer breeders in the northern parts of Finland, Scandinavia, and Siberia (Granlund 2016b). In his book, *Wolf*, Russian wolf researcher M. Pavlov writes “the wolf seems to collect a food storage it never intends to use” (Pavlov 1982).

Wolves’ impact on livestock varies with latitude. Due to the cold climate in northern Finland and Sweden, wolves’ predation on livestock is concentrated on reindeer. The reindeer herding area in Finland is, however, listed under Annex V in the Habitats Directive (EU Commission 2007a), making it easier to cull wolves. In Southern Finland, Sweden, and Norway, wolves usually prey on sheep and dogs. These countries have a strong hunting culture, and hunting with loose dogs is a common practice. In a study conducted in Sweden, a vast majority (86%) of wolf attacks on dogs happened in hunting situations, and in 71% of those cases, the attacked dog was killed (Backeryd 2007). Large carnivore attacks on dogs are emotional issues, as dogs are valuable and honored hunting companions, and also close friends to the hunters and their families.

In Central Europe and the Mediterranean area, wolf attacks on sheep cause considerable losses to sheep breeders. The worst incidents have been in France, where wolves have killed hundreds of sheep in one single attack. After such an attack in 2010, a sheep breeder found 593 of his sheep killed in one night by a wolf pack (de Menten 2010). In France alone, wolves killed 10,234 domestic animals and livestock in 2016; 9,788 were sheep. The average number of sheep killed during one attack was 3.57 (Le Monde des Pyrenees 2016).

In Italy, up to 2,600 wolves roam the Alps, especially in the Apennines, which cross Italy from north to south. In the region of Maremma, nearly 300 shepherds have abandoned shepherding due to heavy wolf predation. In 2016, there were more than 600 predatory attacks on sheep in the Maremma area only, causing losses of up to one million euros to sheep breeders.

The Habitats Directive and the Wolf-Human Conflict

The Council Directive 92/43/EEC of 21 May, 1992 (Habitats Directive), allows viable solutions to the wolf-livestock conflict. Article 16 of the directive states: “Provided that there is no satisfactory alternative and the derogation is not detrimental to the maintenance of the populations of the species concerned at a favorable conservation status in their natural range, Member States may derogate from provisions of Articles 12-15(a) &(b):

- a) to prevent serious damage, in particular to crops, livestock, forests, fisheries and water and other types of property;
- b) in the interests of public health and public safety, or for other imperative reasons of overriding public interest, including those of a social or

economic nature and beneficial consequences of primary importance for the environment.”

Note particularly, “To prevent serious damage to livestock”, “in the interests of public health and safety”, “including those of a social or economic nature”.

These provisions should be enough to prevent wolves from habituating to humans and preying on domestic animals, thus eliminating the main sources of wolf-human conflict.

On 14 November, 2017, I wrote a proposal to the Finnish prime minister’s party that the government should, without prior permission, allow for the euthanization of wolves approaching settlements and livestock. My objective was to revert the ongoing habituation process and force wolves back into the wilderness where they belong. My proposal would also give rural inhabitants the chance to effectively protect their properties and increase their personal security. “If humans can be linked to something that predators fear innately, and that they cannot habituate to, then predators will avoid humans and their habitations” (Geist 2016).

EU on the Edge between Farmers and Conservation

The EU Commission has been conducting a wide range of activities to promote a dialogue among stakeholders with the hope of reducing the level of conflict around large carnivores, and to find solutions to conflict arising between cattle and sheep breeding and the presence of wolves. LIFE (The Financial Instrument for the Environment) is a program launched by the European Commission and coordinated by the Environment Directorate-General. The LIFE project states: “These conflicts need to be managed effectively for humans and large carnivores to co-exist successfully in the long term” (EU Commission 2013).

EU solutions can be divided into two main groups:

- a) Paying a monetary compensation for livestock and domestic animals killed by predators.
- b) Promoting technical solutions, including electric fences, the use of livestock guard dogs, and traditional shepherding.

Monetary compensation has become an increasingly common strategy all over Europe. The systems vary from country to country, with some paying more than market value and others paying less. Most countries only pay for animals that are documented as being lost (dead and wounded). For example:

- In 2014, France paid approximately 325 € per sheep in compensation for damages caused by wolves (Le Monde des Pyrenees 2016). Using this estimate, the total compensation in 2016 should have been 3,181,100 €. This amount equals the price of 1.36 kg beef / day for each of the 400 wolves in France. My calculation uses a standard retail price of 15.93 € / kg.
- In Spain, wolves kill sheep, goats, horses, and cows. To compensate the farmers for their losses, the government spends more than 1.5 million euros per year (Rejón 2016).
- Finland pays a monetary compensation for purebred dogs killed by wolves. The maximum amount for a trained hunting dog is 8,200 € (approx. \$ 10,000). The monetary compensation paid for damages caused by

wolves on dogs and livestock in Finland during 2016 was approximately 1.7 million €.

The EU proposes methods to improve the protection of animals against wolf attacks. A 2014 workshop in Spain proposed some important issues (EU Commission 2014):

- confining the animals every night;
- promoting the use of livestock guard dogs;
- promoting use of fences (permanent or temporary).

In the end, these methods require money and labor, and there is limited evidence that human interventions to prevent livestock damages are effective (Eklund et al. 2017).

Confining Livestock

Confining a large herd of sheep scattered around the alps is a time-consuming task for a single shepherd and a couple of herding dogs. It might even be impossible, as confining requires a safe place where the sheep are contained for the night. Confining cattle is easier, as the herd is usually grazing in an area surrounded by a fence.

Livestock Guard Dogs

An alternate solution to confining the animals is using livestock guard dogs (LDG). Landry et al. 2014 studied internal and external factors that may influence livestock guard dogs' efficiency against wolf predation in the French Alps (Alpes Maritimes Department). Wolves were observed passing a flock of sheep, feeding on freshly killed sheep, or attempting to attack sheep, despite the presence of LGDs.

Wolves were apparently not afraid of LGDs. Although wolves were chased by LGDs or had agonistic encounters, these experiences did not prevent them from returning on the same night or on subsequent nights. Several occurrences were recorded in which a single LGD faced a wolf and exaggerated its behaviors instead of attacking (Landry et al. 2014). Therefore, Landry et al. considered it likely that wolves become habituated to LGDs, suggesting that no long-term avoidance learning occurs (Landry et al. 2014).

Electrical Fences

Some EU countries promote the use of electrical fences. This type of fence creates an electrical circuit when touched by a person or an animal. One terminal of the power releases a short electrical pulse along a connected wire about once per second. The other terminal is connected to the ground.

The effects of the electrical shock depend upon the voltage, the energy of the pulse, the degree of contact between the recipient and the fence and ground, and the route of the current through the body. A study conducted in Denmark at the University of Aalborg suggests that the minimum fence height should be 115–145 cm and the voltage level should be at least 5,000 Volts (Jensen et al. 2017). The popularity of electrical fences is rapidly growing, although there are no studies having evaluated long-term advantages of this solution. As a professional in electronics, I see some problems with electrical fences.

- The wires have to be kept free from all vegetation. This requires much extra work.
- To be effective, the wolf has to touch the ground with at least with one paw pad. The fence has no impact on wolves jumping through/ over it.

- Wolves are extremely adaptive, and they may learn how to avoid electrical shocks from wires.

The Ultimate Solution - Culling Wolves

Despite all efforts to protect livestock, wolves seem to learn how to avoid both fences and LDGs. On 20 July, 2017, the French government approved a cull of 40 wolves to save sheep. Of these 40 wolves, 32 were shot during organized hunts while the remaining eight were shot in efforts to protect sheep from an attack. Farmers demanded the cull to protect their sheep against wolves because “electric fences and fearsome dogs are powerless in the face of the predators” (Phys.Org 2017). Norway allowed a large cull that started on 1 January, 2018, in order to reduce damages to sheep and goats. At the same time, a large wolf hunt was arranged in Sweden in order to reduce the growing wolf population. Other European countries allow the killing of habituated wolves that repeatedly visit settlements. In this case, a separate permit is issued for each wolf.

DISCUSSION

The rewilding of Europe raises several questions about humans' relationship to nature. In a newsletter from 2007, the European Commission expresses its concern about the co-existence between human populations and large carnivores by saying, “These challenges are particularly severe in areas where these species are re-colonizing, or being re-introduced after absences of tens or even hundreds of years and the local human population is therefore no longer accustomed to living in close proximity to large and, in the case of the bear and the wolf, potentially dangerous predators” (EU Commission 2007b).

Living with wolves is nothing humans have ever been, or can ever be, accustomed to. We know from history that, for instance, Charles the Great initiated the systematic culling of wolves in France as early as the 9th century, and systematic killing of wolves with strychnine started in 1818. As shotguns and rifles got more popular, wolf hunting continued until the wolf was exterminated from many parts of Europe (Granlund 2016a).

Wolves have always posed a risk to humans, especially children. In modern India, there is an expression called “child lifting,” describing how wolves catch children (Rajpurohit 1999). Research published by Russian professor Sergei Korytin supports the wolves' tendency to attack children rather than adults (Nygren 2008). Similar tragedies are found in Finland, where some 200 adults and children were killed by non-rabid wolves in the 18th and 19th centuries (Granlund 2016a).

“Examination of historical records and recent reports provides a massive body of evidence showing that wolves have been involved in many cases of attacks on humans. Although some of these attacks are linked to rabid wolves, there is a lot of evidence of predatory attacks” (Linnell et al. 2016). Professor Jean-Marc Moriceau from the University of Caen has found that 9,031 people were killed by wolves in France (Moriceau 2007).

Another view of rewilding is presented by Rewilding Europe, a foundation under Dutch Law that was established 28 June, 2011 (www.rewildingeurope.com): “Rewilding Europe wants to make Europe a wilder place. We want much more space for wildlife, wild nature and

natural processes. We want to bring back the variety of life for us all to enjoy. And we want to explore new ways for people to earn a fair living from the wild.” This approach promotes exploiting the “wilderness” rather than protecting it from humans. There is an example from Sweden of an “open wildlife park” where people could interact with wolves. This experiment ended when an employee of the Kolmården Wildlife Park in Sweden was killed by a pack of wolves she had helped raise (Rosenfelt 2012). This was the first lethal attack in Kolmården, but several nearby incidents were documented earlier (Granlund 2016b).

CONCLUSION

Promoting human/wolf co-existence is most certainly doomed to fail for the simple fact that wolves’ behavior has not changed during the past 2,000 years. There is no reason to believe that wolves will change in the future unless the pure wolf is substituted by wolf-dog crossbreeds.

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