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Man's Best Friend? Human-Canid Conflict in the 21st Century

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Despite our close relationship with the domestic dog (Canis familiaris), humans have frequently been in conflict with other members of the canid family. Due to the adaptable nature of the canids, they have been capable of living in close proximity to us in a human dominated landscapes for centuries. This proximity has contributed to our complicated relationship with this family. Though many canid species are no longer vilified and persecuted to the extent they were in the past, public perception of these animals remains an important factor to consider in their conservation. The predation of domesticated animals, from cows to chickens, is a significant source of much of the negative sentiment directed at canids, and continues to be a source of conflict. Educating the public about these species in order to dispel myths, and setting up and maintaining systems in which people are compensated for costs associated with living in proximity to wild canids, such as reimbursement for livestock losses, are integral to the successful co-existence of humans and canids. Here I look at the African Wild Dog (Lycaon pictus) and the Grey Wolf (Canis lupus) as case studies on how public perceptions of wild canids have changed in recent years, and what further change is required to safeguard these species for centuries to come.

Introduction

The domestic dog (*Canis familiaris*) is often referred to as man's best friend. This species was the first to be domesticated and so we have shared a close relationship with these canines for over 15,000 years (Hughes & Macdonald 2013). Dogs are highly valued in many cultures as pets but have also gone on to perform a number of important roles in human communities. Dogs aid our police forces in the detection of illegal substances, search for missing persons and lead the blind. Recent research has even pointed towards dogs fulfilling a role in medicine, using their highly effective sense of smell to detect cancer in patients; a study by Cornu *et al*. (2011) found that dogs can be trained to detect prostate cancer with a significant success rate by smelling urine samples. But despite our general appreciation of the domestic dog, we do not necessarily extend this same fondness to its wild relatives.

Members of the Canidae family (order Carnivora) are adpated for the cursorial pursuit of prey, typically in relatively open environments. To achieve this, they are equipped with lithe bodies and long limbs with digitigrade, four-toed feet (Sillero-Zubiri 2014). Most of the smaller canid species are opportunistic omnivores, while the larger group-living species tend to be more strictly carnivorous. Due to the inherent versatility of the canids, many thrive in human landscapes such as farms and cities where they may prey upon livestock and game species (Sillero-Zubiri 2014).

Where there are large carnivores and humans sharing a space, conflict typically follows. The conservation needs of large carnivores frequently clash with human interests, making the conservation of members of the order Carnivora particularly challenging. Though in recent years, public perceptions towards canids have been improving. Historically, the majority of people felt negatively about these animals. This negativity often stemmed from an ingrained fear of the larger canid species (Sillero-Zubiri *et al.* 2004) Here I will review two of these larger species as case studies.

Case Study in the Developing World:

Lycaon pictus – The African Wild Dog

Three million years of divergence make the African Wild Dog (*Lycaon pictus*) a distinct member of the canid group, and one belonging to a monotypic genus (Creel & Creel 2002). Wild dogs have a propensity to avoid areas heavily used by lions (*Panthera leo*), which often causes them to move outside of protected areas and come into conflict with humans (Becker *et al.* 2013).

Wild dogs were actively persecuted throughout much of the 20th century (Creel & Creel 2002). In Zimbabwe for example, a minimum of 3,404 wild dogs were shot between 1956 and 1975, for the purpose of "vermin control". The species had been declared vermin at the start of the 20th century as farming and ranching expanded across Africa and rewards were offered for each individual destroyed (Childes 1988). Wild dogs were intensely disliked for a multitude of reasons. The main reason for the scorn directed at this species was its method of killing its prey. As wild dogs are small relative to the size of many of their prey species, they kill their target by disembowelment (Creel & Creel 2002). It was also widely believed that wild dogs kill more prey than they require and "terrorise" their prey needlessly (Woodroffe & Ginsberg 1999).

As a result of this intense persecution throughout much of the 20th century, African Wild Dogs have been eradicated from 25 of the 39 in which countries they were originally found (Woodroffe *et al*. 2005). By the 1980s, this active persecution of African Wild Dogs was slowing as a greater number of studies were conducted on their behaviour and ecology. The species also received legal protection in the six countries where its populations were highest, namely; Botswana, Kenya, South Africa, Tanzania, Zambia and Zimbabwe (Creel & Creel 2002).

For years African Wild Dogs lived in the shadows of Africa's better known carnivores, but recently the fate of wild dogs has looked more certain as the species has become the focus of a number of studies and conservation projects scattered across the continent (Creel & Creel 2002). Wild dogs range widely, meaning that even

packs living in protected areas come into contact with humans at reserve borders. Over half of wild dogs found dead in protected areas have died due to human activity; namely shooting, snaring, poisoning and traffic accidents, with domestic dogs also contributing to the mortality rate as disease vectors (Woodroffe *et al.* 1997). Many of these deaths are not the result of direct persecution, as African Wild Dogs are frequently caught in snares set to catch other species. Snare survivors occurred in 67% of wild dog packs studied in a population Luangwa Valley, Zambia (Becker *et al.* 2013), showing just how frequent snaring incidents are. Whether these snaring incidents, as well as other anthropogenic causes of wild dog mortality, are intentional or accidental, human activity remains a significant threat to this species.

In South Africa, there is only one remaining viable population of African Wild Dogs, which exists in Kruger National Park. Current conservation efforts in South Africa are therefore focused on maintaining a metapopulation of wild dogs across a series of isolated reserves. However, Lindsey *et al.* (2005) suggest that there is potential to conserve wild dogs *in situ* on ranchland. Cattle ranching has now been replaced by game ranching across much of southern Africa. There are approximately 4,000 game ranches in South Africa alone (Hearne & Mckenzie 2000). Wild dogs have been seen to recolonise parts of their former range in game-ranching areas, but the long-term survival of these packs depends on the willingness of people to tolerate their presence. Lindsey *et al.* (2005) investigated the attitudes of South African ranchers to African Wild Dogs. Their results indicated that wild dogs are the least popular large carnivore among ranchers, but younger ranchers were more positive than older ranchers, suggesting that tolerance to this species may increase. Attitudes of ranchers who already had wild dogs on their land were more positive than those without, so increased exposure to the species may also improve the public perception of the African Wild Dog, as the negative stereotypes surrounding them may be more perceived than real.

Wildlife tourism is now a significant source of income for many people across the African Wild Dog's range. Often left in the shadows of other large carnivores in the past, wild dogs may now be

considered one of the most economically and ecologically important large mammal species in many areas (Becker *et al*. 2013). Although significant progress has been made, more than half of the mortality recorded among adult African Wild Dogs is still directly caused by human activity (Sillero-Zubiri *et al*. 2004).

Case Study in the Developed World:

Canis lupus – The Grey Wolf

There are few if any animals so enshrined in myth and fairytale as the Grey Wolf (*Canis lupus*). Although some stories portray wolves in a positive light (such as the founders of Rome Romulus and Remus, being raised by a wolf), for the most part wolves have been demonised in folklore for centuries (Sillero-Zubiri 2014).

Perhaps linked to this, few large carnivores have been so persecuted as the wolf, despite its status as the direct ancestor of our close companion, *Canis familiaris.* Originally, the Grey Wolf was the most widely distributed mammal in the world (Sillero-Zubiri *et al*. 2004) but now it has been extirpated from much of Western Europe, the United States of America and Mexico. The species' original range has been reduced by approximately one third due to human persecution and habitat fragmentation (Hunter & Barrett 2011). However, while conflict between humans and wolves remains topical, recent years have seen enhanced legal protection and reintroduction programmes for wolves, as well as natural recolonisation (Ripple *et al*. 2014).

In the developed world there have been changes to livestock husbandry practices in areas where large carnivore populations were greatly reduced or eradicated all together in the past. Livestock are no longer guarded by people or domestic dogs across much of Europe and North America, making them easy targets for recolonising carnivores (Thirgood *et al*. 2005). A study conducted in Slovakia by Rigg *et al.* (2011) found that the use of livestock-guarding dogs with sheep flocks lead to significantly decreased predation from wolves.

Wolves are currently found in 28 European countries with an estimated total number of over 12,000 individuals (Chapron *et al.* 2014). The species is thriving in human-dominated landscapes and is largely found outside of protected areas, with most populations having been either increasing or stable in recent years (Chapron *et al.* 2014). Chapron *et al.* (2014) suggest that there is reason for "cautious optimism" as wolves and other large European carnivores thrive in areas densely populated by humans, thus "representing an often underappreciated conservation success story." Europe's wolf population is over twice that found in the lower 48 states of the U.S.A. despite being little over half the size and over twice as densely populated (Chapron *et al*. 2014).

In recent years, the role of the wolf as a top predator in its ecosystem has been more widely appreciated. Wolves have a profound influence on the biological communities they inhabit through predation, interspecific competition and triggering trophic cascades (Treves & Karanth 2003). Studies carried out in Yellowstone National Park, U.S.A., have looked at the trophic cascade involving wolves, elk (*Cervus canadensis*) and trembling aspen (*Populus tremuloides*); these studies have shown that the movement patterns of elk are shaped by wolf distribution (Fortin *et al*. 2005). Elk do not avoid travelling through high-wolf-use areas, but they do adjust their behaviour as a response to the predation risk. As a result of this, some areas are browsed more heavily than others (Fortin *et al.* 2005). Wolves can also impact mesocarnivores such as the Red Fox (*Vulpes vulpes*), and therefore structure ecosystems along multiple food-web pathways (Ripple *et al.* 2014).

The Co-Existence Model

The co-existence model is the alternative to the separation model, which has often been regarded more highly in the past. The separation model argues that large predators can only thrive in protected areas or wilderness, away from human activity. However, this may well be a result of previous policies which aimed to exterminate these species (Chapron *et al*. 2014). Linnell *et al*. (2001) found that wolves do not require vast wilderness areas to thrive. They can per-

sist in heavily modified habitats in close proximity to humans, even when both their prey and the wolves themselves are being harvested, provided this harvest is well regulated to ensure sustainability. The recolonisation of wolves across much of Europe and the return of wild dogs to parts of their former range in ranchland areas indicate that humans and large canids can co-exist if appropriate management strategies are in place.

One such management strategy is the provision of financial compensation to those affected negatively by carnivore presence, and this can also have important benefits in terms of reducing poverty in developing countries (Dickman *et al.* 2011). Carnivore populations can generate considerable revenue. However, many existing revenue streams in developing countries are diverted externally instead of going to the local community (Dickman *et al.* 2011). This poor cost-benefit ratio leads to the extirpation of large carnivores from human-dominated land (Dickman *et al.* 2011). This issue needs to be addressed and improved as a matter of urgency, as large areas of the remaining ranges of threatened carnivores is on human-dominated land.

Conclusions

The conservation of canids can be a contentious topic due to inherent human biases. The issues discussed here are widely applicable to large carnivores in general but wild canids in particular seem to engender negative attitudes (Lindsey *et al.* 2005). Education of local communities living with canids is of crucial importance but conservationists must be willing to be educated themselves in turn. People who suffer costs due to canid species tend to oppose conservation agendas. The critical challenge facing conservationists is to develop workable measures to reconcile human activity with the needs of canids, particularly when the species in question is threatened (Sillero-Zubiri *et al.* 2007).

Large carnivores pose one of the most pressing current conservation issues due to the striking declines in their geographic ranges and population sizes, and also because of their roles as umbrella

and flagship species for wider biodiversity (Dickman *et al.* 2011). Conservation in the 21st century should not focus solely on the preservation of vast wilderness areas. Though reserves remain hugely important, the successful conservation of canids should be fostered as co-existence between man and the family of his supposed "best friend".

Recent decades have seen great changes in the way we perceive wild canids. Gradually, fear of the "big bad wolf" appears to be transitioning into respect for keystone species. Whatever the current status of wild canids, the future is sure to pose new issues as the human population continues to grow and expand. Whether the implications of this on canids are direct or indirect, education about these wide ranging carnivores is critical. Like humans, canid species require a lot of space. They have demonstrated that they can live with us, despite the monumental changes we make to the land around us. Perhaps the 21st century will be the time we show that we can live with them too.

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