Using Livestock Guarding Dogs as a Conflict Resolution Strategy on Namibian Farms

by
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Introduction

Once widespread across Africa, Asia and the Middle East, cheetahs *Acinonyx jubatus* have undergone a serious decline over the past century, with population estimates falling from around 100.000 animals in 1900 to perhaps 15,000 by 1990 (Marker 1998). They have been extirpated from at least 13 countries during the past 50 years, and many of their remaining populations, especially in the Middle East and north and west Africa, are now too small and fragmented to be viable in the long term (Marker 1998). One of the few remaining strongholds for cheetahs is in Namibia, in south-western Africa, which is thought to contain the largest population of free-ranging cheetahs in the world, estimated at 3,000 adult animals (Morsbach 1987). Due to a combination of reasons, including competition from other large carnivores such as lions *Panthera leo* and spotted hyenas *Crocuta crocuta*, and the impact of diseases such as anthrax, the majority of Namibia's cheetahs live outside the country's vast protected areas, but mainly on the commercial farmlands, mainly in the north-central regions of the country. Eradication of lions and spotted hyenas by commercial farmers means reduced competition for cheetahs, while the abundance of free-ranging game and permanent water-points on the farmland creates favorable habitat.

However, this distribution has resulted in a high degree of conflict with local farmers, who perceive cheetahs as posing a significant threat to their livestock and farmed game (Marker-Kraus et al. 1996). Although there is little empirical evidence to support this perception (Marker et al. 2003a), such conflict has resulted in the widespread killing or capture of cheetahs on the farmlands, with almost 7,000 cheetahs reportedly removed from the Namibian farmlands during the 1980's alone (CITES 1992). This level of removal evidently has substantial conservation implications, and the Cheetah Conservation Fund (CCF) was established in Namibia in 1990, in order to examine the reasons for cheetah removals and try to develop ways in which farmers could co-exist with cheetahs and other predators on their land.

Using livestock guarding dogs to protect stock has a long history, and has proved effective in a wide variety of situations, from guarding stock against bears in Europe to protecting them against wolves and coyotes in the U.S. (Linhart et al. 1979, Sims and Dawydiak 1990). We were interested in seeing whether the technique could be useful in an African livestock system, which has stock that often range untended over vast areas, and has a large guild of predators on the farmlands, including cheetahs, leopards *Panthera pardus*, caracals *Felis caracal* and black-backed jackals *Canis mesomelas*. Our research was primarily conservation-oriented, with the aim of gaining a better understanding of whether guarding dogs would be effective at reducing conflict on the farmlands, and what factors affected the dogs' success, but it also had an academic component, as we

Figure 1. Herder with two *Anatolian shepherd dogs* accompanying a flock of goats. (Photo: Courtesy of Cheetah Conservation Fund)

felt that it would be useful to conduct a comprehensive study of the behavior and efficacy of these dogs in a novel situation. This research involved quantifying those behavioral traits of dogs identified as important by Coppinger and Coppinger (1980) for successful guarding, namely attentiveness, protectiveness and trustworthiness. In addition, we examined the care given to the dogs by the farmers, and investigated how satisfied farmers were with the performance of their guarding dog. We also examined the mortality rates of livestock guarding dogs placed on Namibian farms, determined causes of mortality, and gathered information regarding behavioral problems exhibited by the dogs.

Study area

The Namibian farmlands support reasonably high densities of carnivores, with estimates of 0.05–0.1 cheetahs/100 km^2 and 0.5–1 leopards /100 km^2 in the country (Stander & Hanssen 2004). The study area covered the north central regions of the country where the highest density of cheetahs are known to occur. The area covered approximately 275,000 km^2, which encompassed both commercial farms, where livestock (usually cattle, with some goats and sheep) and/or farmed game are managed and sold for profit, and communal farms, where sheep and goats are the most common stock and are farmed on a subsistence basis. Livestock are commonly allowed to roam over large areas in the day, sometimes accompanied by a herder (Figure 1) , and are usually brought back into a corral at night (Marker-Kraus et al. 1996). On average, livestock farms in the study area had 118 goats and 78 sheep, with a mean flock size of 134 animals (Sartini 1994).

Farmers in the study area utilized a variety of techniques aimed at reducing livestock depredation, including employing herders to look after smallstock while grazing, the placement of donkeys as guardian animals within cattle herds, and the use of baboons *Papio ursinus* to protect smallstock (Marker-Kraus et al. 1996). Local dogs were sometimes kept with smallstock to protect them, but these dogs were not bred specifically for livestock guarding and often showed herding tendencies, which made them less suitable for guarding (Marker-Kraus et al. 1996). In addition, farmers often had corrals near to the farmhouse where vulnerable stock, such as calves under six months old, could be kept in, and some commercial farmers installed electric fencing in order to protect particularly valuable game on their land (Marker-Kraus et al. 1996).

Placement and cost of livestock guarding dogs

The first livestock guarding dogs were imported into Namibia in 1994, when 10 *Anatolian Shepherd Dogs* (Figure 2) were brought in and used to initiate a breeding program. This ia a Turkish breed, however the dogs we imported were from the Birinci kennels in the USA, where they were bred and housed with smallstock. After researching the available breeds, we decided to import the *Anatolian Shepherd Dogs* for use in Namibia, due to certain characteristics such as its large size, short coat, and independent nature, which we felt would make it best suited to the conditions faced on the Namibian farmlands. One litter of *Rhodesian Ridgeback*/ *Anatolian Shepherd*

Figure 2. *Anatolian Shepherd* Dog with a flock of goats. (Photo: Courtesy of Cheetah Conservation Fund)

Dog crossbreeds were bred and placed as guardians, but all the rest of the dogs placed were pedigree *Anatolian Shepherd Dogs*. The *Ridgeback*/*Anatolian* crossbreeds appeared to work well, but there were too few crossbreeds (n = 10) to make a reasonable comparison with the pedigree dogs, so all analyses were restricted only to purebred *Anatolian Shepherd Dods*. Since 1994, 215 purebred puppies have been born in 24 litters from 8 males and 9 females, representing bloodlines from 16 founding dogs (8 males and 8 females).

Puppies were born and raised until placement in a working corral, which familiarized them with livestock, and human contact was kept to a low level to ensure that dogs primarily bonded with the stock. Puppies were usually placed with the stock they were intended to guard between 6–8 weeks of age. Livestock guarding dogs were either placed with sheep, goats, or a mixed herd of both species. Dogs were not placed with cattle due to the aggressive nature of the breeds of cattle in Namibia, and the extensive system of their management. Farmers were encouraged to use other management techniques, such as guarding donkeys, for cattle. Dogs were placed singly, but on some occasions, for instance where a farmer had several herds of stock, another dog was later placed with the same farmer. Farmers often had their own dogs with the stock as well, and we found no effect of other dogs on the efficacy of livestock guarding dogs placed (Marker et al. accepted *a*).

Regular checks were conducted, both in person and over the telephone, once dogs had been placed with farmers, and farmers were encouraged to contact CCF with any problems with the dog as soon as it arose. In some instances, dogs were removed from their first home, usually because farmers had reported persistent behavioral problems, and these dogs were subsequently transferred to a new situation. These transferred dogs proved to be no less effective at protecting stock than those that were placed with their stock as young puppies (Marker et al. accepted *a*).

Until 2003, all livestock guarding dogs were provided to farmers free of charge, with CCF bearing all the costs for breeding, raising and vaccinating the puppies, and began neutered the puppies at 6 months old with no cost to the owners in 1996. Since then, we neuter all dogs placed as guardians, unless there was an agreement with CCF that the dog would later be used in the breeding program, and we found that neutering made no difference to the effectiveness of guarding dogs. As of 2003, commercial farmers were asked to pay the costs incurred while raising the puppy to placement age, and for its neutering, although all costs were still covered for owners on communal farms. In 2003, the cost for commercial farmers usually came to N$800 (approximately US$ 130) for both male and female puppies, including neutering, which still made them very cheap compared to the sale price of such dogs in South Africa, where livestock guarding dogs routinely fetch around N$4,000 (US$600). (J. Steyn and C. Stannard pers. com.). Farmers did not pay for adolescent or adult dogs that were transferred to new homes.

Effectiveness of the dogs

Research conducted on dogs placed between 1994 and 2002 showed that livestock guarding dogs were very effective at reducing the reported rates of stock depredation on Namibian farms (Marker et al. accepted *a*). Almost three-quarters of responding farmers reported a large decline in the levels of stock loss since getting a livestock guarding dog, and the majority of farmers felt that they had benefited economically from having a guarding dog. We have compiled the results of this long-term research into two papers, one on the overall effectiveness of the dogs (Marker et al. accdpted *a*) and one on the mortality of dogs placed on Namibian farms (Marker et al. accepted *b*).

We have some observational data on how the livestock guarding dogs interacted with predators, with the dogs becoming very agitated and barking loudly at the approach of the predator. In some instances, farmers have witnessed their dogs fighting with predators, and the dogs have been recorded as killing jackal, leopards and baboons that were threatening the stock. Although adult *Anatolians*, which weigh approximately 40 kg, outweigh baboons by 20–25 kg, they are fairly similar in size to leopards, which averaged 46 kg for males and 30 kg for females in our study area (Marker & Dickman in press).

Mortality

As of December 2001, just over half of the 143 livestock guarding dogs placed by CCF were still working on Namibian farms (Marker et al. accepted *b*), and by August 2004, 103 dogs (56%) were working on farms. Over a third of placed dogs died while working as guardians (n = 78), mainly due to accidents such as being hit by cars, being bitten by snakes, or drowning (one dog was reported to have drowned in a reservoir), while 21 dogs were moved out of a working situation, either to become pets or

for breeding purposes. Culling by the owner, primarily in the early part of the study, also accounted for a substantial proportion of working dog deaths, particularly on commercial farms, usually as a result of the dog chasing or harassing stock. We received no reports of livestock guarding dogs being killed either by predators (i.e. cheetahs or leopards) or by other dogs, although there were two reported incidents of young dogs being killed by baboons.

Problems encountered

One of the main problems with the livestock guarding dog program in Namibia is the sheer distances involved, as the recipient farmers are widely distributed across a vast area of the country. Communication can be hard, especially in the communal areas where phones are not available. This makes regularly visiting and checking all the placed dogs an arduous, time-consuming and expensive task. A lack of rigorous and reliable record-keeping also makes it hard to accurately quantify the real impact that these dogs are having on the levels of stock loss, as there are few data on the levels and causes of stock loss before and after dog placement.

There was a high prevalence of behavioral problems exhibited by the dogs themselves: almost all the dogs evaluated were reported as showing problems at some stage (Marker et al. accepted *a*). The three most common problems were chasing game (which sometimes resulted in the dogs killing and occasionally feeding on wildlife such as kudu), staying at home instead of going out with the stock, and harassing or killing livestock (Marker et al. accepted *a*). However, we found that the majority of problems were correctable with the appropriate training, and encourage farmers to contact CCF as soon as possible and work through problems instead of resorting to culling the dog or transferring it into a pet situation.

Summary

Overall, our research has shown that the placement of livestock guarding dogs on Namibian farms can have a very positive effect for local farmers, in terms of reducing stock losses and having an economically beneficial impact. Although studies have indicated that cheetah removals have dropped in the study area over the time that guarding dogs were placed (Marker et al. 2003*b*), it is hard to measure the extent to which these changes were due to conflict resolution measures such as dog placement, and how much was due to other factors, such as education, or changes in cheetah population size. Nevertheless, numerous other studies have demonstrated a link between levels of stock depredation and the removal of those predators blamed (Ogada et al. 2003, Shivik et al. 2003), so the placement of these dogs on Namibian farms may well have had a positive effect in terms of reducing cheetah removal rates. Despite the inevitable problems encountered with any conflict resolution measure, this study has shown that the use of livestock guarding dogs can be an effective tool for both communal and commercial farmers in Namibia, and could have important implications in many similar situations elsewhere.

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Livestock Guarding Dogs and Wolves in the Northern Rocky Mountains of the United States

by
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Introduction

The grey wolf *Canis lupus* was once distributed throughout North America (Nowak 1995). Conflict with livestock and historic public hatred of wolves resulted in extirpation of wolf populations in the western United States (U.S.) by 1930 (Mech 1970). In 1974, wolves were protected by the federal Endangered Species Act of 1973 (ESA) and their recovery became the responsibility of the U.S. Fish and Wildlife Service (USFWS). Wolf restoration in the western U.S. began in 1986 when a 'Canadian' pack denned in Glacier National Park, Montana (Ream et al. 1989). Management in northwestern Montana emphasized legal protection and building local public tolerance of non-depredating wolves (Bangs et al. 1995). Wolves from Canada were reintroduced to central Idaho and Yellowstone National Park in 1995 and 1996 to accelerate restoration (Fritts et al. 1997, Bangs et al. 1998). The wolf population grew to an estimated 800–850 wolves in the Northern Rocky Mountains (NRM) of Montana, Idaho, and Wyoming by late 2004 (USFWS et al. 2005). Since 1987, wolves have killed a minimum of 410 cattle, 1,044 sheep, 70 dogs [18 of which were being used to guard livestock], 12 goats, 9 llamas, and 3 horses. To minimize conflicts, we moved wolves 117 times and killed over 275 (Bradley 2003, USFWS et al. 2005). We encourage sheep producers to use livestock guarding dogs (LGDs) and other methods to reduce the risk of wolf depredation (Bangs et al. In press, Bangs et al. 2004, Bangs and Shivik 2001). A private group, Defenders of Wildlife, helps pay for LGDs with sheep producers to encourage their widespread use. LGDs are working well against a diverse carnivore guilde but this paper is intended to show some novel aspects of their use against wolves. We discuss some interactions we have observed between LGDs and wolves and speculate about increasing the effectiveness of LGDs to protect livestock from wolf depredation.