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Providing Livestock Guarding Dogs and Compensation of Livestock Losses Caused by Large Carnivores in Bulgaria

by
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Introduction

Predation on livestock in Bulgaria is a serious problem. Not just because of the number of animals killed but rather because livestock losses motivate the livestock breeders to kill large carnivores in revenge, even using poison baits which are illegal in Bulgaria. Carnivores that kill livestock in Bulgaria include the brown bear *Ursus arctos*, wolf *Canis lupus*, jackal *Canis aureus* and exceptionally, the red fox *Vulpes vulpes*. The deployment of poison baits has unfavourable impact on the populations of carrion eating species as vultures, namely: black vulture *Aegypius monachus*, bearded vulture *Gypaetus barbatus*, griffon vulture *Gyps fulvus*, egyptian vulture *Neophron percnopterus* and several eagles: imperial eagle *Aquila heliaca* and golden eagle *Aquila chrysaetos*. Most of these species are threatened and some of them have even been exterminated from Bulgaria due to the use of poison baits in the past.

Livestock depredation

Wolves are present in the southwestern part of Bulgaria in altitudes of 350-1800 m.a.s.l. while brown bears occur in the mountains Rila and Pirin. In addition, there are many feral and free-ranging dogs which greatly outnumber wolves and bears, although few dogs are believed to attack livestock as local hunters or poachers quickly kill aggressive dogs when sheep owner ask them.

The Fund for the Wild Flora & Fauna's (FWFF) project area covers the municipalities of the SW edge of Bulgaria on territory of about 2000 km². There the wolf causes the most numerous livestock kills (Figure 1), while the bear is the one that causes the highest economical losses by killing larger livestock like cattle and horses. The jackal and the red fox are rarely responsible for livestock losses. The feral dogs are a very serious problem in the settlements and the areas where wolves and bears are absent. The livestock density in the study area is 38 animals per 1 km² in total. The density of the larger



Fig. 1: Sheep killed by wolves in the village of *Strumyani* SW Bulgaria with their owners. (Photo: FWFF)

livestock species is 6 animals per 1 km². Density of goats and sheep is 32 individuals per km².

The mortality due to predation is up to 10 % in the herds where no LGDs are used and less than 1% in herds with good LGDs. The mortality due to feral dogs is about 1.1%. Mortality due to other reasons, thunderstorms, diseases etc., is about 1.2 %.

Livestock husbandry systems

There are several different livestock husbandry systems in the study area. Livestock breeders have different numbers of livestock and are organised as follows:

Livestock breeders with small flocks owning 2-5 sheep. They co-operate during the summer period by forming a common herd. From May to November each owner herds the common herd 1 or 2 days per month on a rotational principle. During the summer the sheep in the cooperative herds are shepherded during the day. During the night they are in common corrals but they are protected well enough against predators. During this summer period they loose many sheep due to predation. This leads to several problems. First of all the shepherds are not very experienced as this is not their daily job. Therefore, sheep can stray from the flock and spend the night outside of the barn, such that they are vulnerable to wolf predation. Secondly, the livestock breeders which co-operate in this way usually are not able to

raise and to train livestock guarding dogs (LGDs) properly. During the winter season each owner herds his own sheep (2-5 individuals) or leaves in the barn. This group can loose up to 30-40 % of their sheep during the summer. In the same time this group does not have problems with the predators during the winter, because they keep their 2-5 sheep in the barn and feed them all the winter with hay and forage.

Livestock breeders with medium size flocks owning 6-25 sheep. This group also co-operates during the summer. Their livestock is exposed to predator attacks in the same manner as those of the small flock owners, but there is less economic pressure in the conflict.

Because they own more sheep it is very rare that they loose all their animals due to depredation. But as they own more sheep they use every possibility to graze their sheep on pastures in winter, making them more vulnerable to predation. Often the weather changes in winter and the wolves are very successful in their attacks. This way during winter there are some 15-20 small sheep herds (6-25 sheep) herded by their owner in the area next to the village. This group is not suitable to keep a LGD because they have too few sheep such that it is not economically effective, and the seasonal merging of flocks makes it hard to integrate LGDs from different flocks.

Livestock breeders with large flocks owning more than 25 sheep. This group is the best for taking actions against predator attacks. They usually maintain two or more LGDs, and they are very experienced shepherds. They are only exceptionally affected by livestock depredation. The only problem in this group is that they are usually very conservative people and it is very difficult to collaborate with them. These people in the project are forming 0.8% of all livestock breeders and are keeping about 10% of the livestock.

In Bulgaria the recent structure of livestock husbandry is such that it is more like an extra work for the owners, rather than their main profession. Most of the livestock breeders are retired or have another job and spend only a part of their time with the animals.

Compensation herd project

The Fund for the Wild Flora & Fauna (FWFF) is a nature conservation NGO with branches in Bulgaria and Macedonia. It is working for species and habitat conservation promoting sustainable agricultural practices. The organization has established a compensation program in 2000, which provides for direct replacement of stock losses due to confirmed predator attacks. It turned out to be the most effective strategy to reduce revenge killings. It offers immediate and positive incentive for behaviour change in this historical response by livestock breeder in the conflict with native predators. At the same time it serves to “build bridges” between Bulgaria’s environmental community and the rural population, which continues to subsist largely on traditional and natural resource use, encouraging cooperation for future conservation endeavours.

Organisation of the compensation project

In order to be compensated if predators kill livestock, the farmers must fulfil the following criteria:

- They should use good guarding dogs for the protection of their herd;
- The herd should always be herded by a shepherd;
- The herd should never be left outside the corrals during the night.



Fig. 2: Compensation of the livestock owners in the village of *Strumyani* with sheep from the FWFF’s compensation flock. (Photo: FWFF)

When livestock depredation occurs the shepherd should call the FWFF team and the case is investigated. Depending on the level of coverage of the criteria for compensation, the FWFF team decides how to compensate the farmer. The compensation can be conducted as follows:

- Replacing the killed sheep or goat with a live one out of the FWFF compensation herd of 200 sheep and goats (Figure 2); FWFF has provided 38 live animals (sheep and goats) from its compensation herd in SW Bulgaria during 2004 (Tab. 1). The success is visible since the local people are less negative towards predators, when they receive a live animal as reimbursement of the lost one. The FWFF compensation herd consists of more than 200 Karakachan sheep, that are herded by a professional shepherd and are guarded by 4 Karakachan dogs (2 castrated females, 1 fertile female and 1 fertile male).
- Providing a good guard dog. FWFF has provided more than 20 dogs since 2000 to shepherds in SW Bulgaria and in the eastern Balkan Mountain. The dogs come from breeding centres in Bulgaria as well as from the FWFF’s own dogs that guard the compensation herd. The breeding centres for Karakachan Dogs are usually located in the towns where dogs are produced for selling. They have never seen sheep before bringing them to the herd. Nevertheless, even these herd dogs show satisfactory.
 - Providing forage for the remaining stock. The breeders are always happy to receive something as compensation. Forage is one of the cheapest things that could be provided to the livestock owners, when they do not fulfil the criteria for full compensation by FWFF.
 - FWFF pays the insurance bill for the rest of the animals in the herd. The FWFF works in collaboration with a private insurance company called HDI.

LGD project

There have been two target municipalities chosen – *Kresna* and *Strumyani* in SW Bulgaria – with 28 settle-

ments with which we are working with LGDs. About 50 cases of livestock being killed by predators were investigated in the target region in 2004. In most of the cases the shepherds did not cover the criteria for compensation set by FWFF. The need to improve the livestock breeding practices in order to reduce the predator kills was obvious.

We have introduced 3 adults, 4 immature and 11 puppy *Karakachan Dogs* (Figure 3). The best results are shown from the puppies introduced in the herd (later castrated to keep prevent wandering). But the training is of highest importance. Even an adult dog with a good trainer shows satisfactory results. That means the shepherds must pay attention to the dogs behaviour and correct it if necessary. The number of dogs needed in a herd depends on the size of the herd. The best result we observed was at a rate of 1 dog per 50 sheep and the minimum number of the dogs should be 2 dogs per herd.

Effectiveness

Generally it could be stated that predators do not attack the herds guarded by well-trained mature *Karakachan Dogs*. In two cases feral dogs were responsible for livestock losses into the barn, mainly killing lambs. But this happened during the day when the dominant LGDs are away from the barn with the herd. The problem is that when we introduced *Karakachan Dogs* in some of the herds in the area, the other neighbouring herds remained unprotected. The wolves then appear to increase their depredation on the unprotected herds. It would be interesting to see what would happen if all the herds were supplied with good guarding dogs. After the introduction of immature LGDs in two herds where livestock losses were common in 2004, the losses were reduced to half. The shepherds believe that when those dogs become mature the losses will totally be stopped, as they have had experience with such dogs in the past.

My impression is that the predators – mainly wolves – keep away from the herds with mature *Karakachan Dogs*, although we have not observed any direct encounters. In the herds with immature dogs the wolves kill sheep not far from the dogs as no adequate

Tab. 1: Livestock killed by large carnivores (n=147) in the year 2004 in the municipalities of *Kresna* and *Strumyani*. About 300 km², with some 30.000 sheep and goats. The information received is believed to be less than 40 % of the actual number of cases of depredation.

Livestock species	Number	Percent
Sheep	104	70.7 %
Goats	32	21.7 %
Donkeys	7	4.7 %
Cows	4	2.7 %
Total	147	

reaction from the side of the dog is expected until the shepherd is intervening. But developing this behaviour is part of the training.

The best practice according to our observations is to introduce two castrated dogs – sisters or brothers, or a sister and a brother – up until their 5th month. Of great help would be the presence of a mature, well-trained dog. The presence of people around the herd while these dogs reach maturity should be minimized and the dogs should be fed inside the barn.

Cost of a LGD

The LGDs cost about 50-150 euros per pup and 100-250 euros per adult. A single dog costs about 120 euros per year to maintain. Keeping 4 dogs means 40



Fig. 3: Working *Karakachan Dog*, castrated female. (Photo by Emilian Stoynov/FWFF)

euros per month or 1/3 to 1/5 of a shepherd's salary (the average shepherd's salary is about 150-200 euros per month).

Problems with LGDs

Since the beginning of the project in the year 2000 till the beginning of 2005, 5 dogs died due to the following reasons: poisoning (2), killed by a car (1), shot (1), infection of the castration wound (1).

Aggressiveness

The dogs are quite aggressive against hikers, bikers or anything else that is approaching the flock. But they will immediately stop when the shepherd commands them. There have been some incidents where hikers have been bitten by the dogs when the shepherds haven't been near the flock. But these hikers haven't been injured seriously. Hikers often are afraid of the dogs and sometimes very aggressive towards the shepherds because of the dogs. Some are even willing to insist that the dogs are killed. Our dogs also killed a hiker's dog that was approaching a flock when the shepherd was away. In some areas the hunters are also known to lose their hunting dogs due to shepherd dogs. In some cases hunters set poison to kill the shepherd dogs.

Main problems within the project

We face several problems within our project that are:

- The bad organization of the livestock breeding – with many shepherds unable to raise and keep guarding dogs;
- The loss of traditions on how to breed livestock and guarding dogs;
- The huge number of livestock breeders with very few head of livestock.

Main problems with LGDs

We are also facing problems dealing with the LGDs. But these problems are also connected with the problems dealing with livestock husbandry.

- Bad training, due to inexperienced shepherds, or in the cooperative herds where there is a constant turn over of shepherd.
- Lack of aggression of the castrated dogs against feral dogs, such that we must use groups of LGDs consisting of both castrated and uncastrated ones
- Uncastrated dogs abandoning the herd looking for females in heat.

Recommendations

- The organization of the livestock breeding should be improved and fewer owners should breed larger numbers of livestock. Creation of co-operatives should be encouraged and training of professional shepherds should be started.
- Keeping of *Karakachan* Dogs in the areas of predator presence should be set as a criteria for livestock insurance. This measure will be much more effective after the introduction of the measure 1, stated above. LGDs should also be introduced in the National and Nature Parks. The shepherds that are grazing their livestock in the National and Nature Parks should be obliged to pay insurance for their livestock.
- Organizing courses for shepherds (how to breed the sheep in accordance with the local circumstances, how to train the guarding dogs etc.).

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