

## PREVENTION OF WOLF AND OTHER LARGE CARNIVORE DAMAGES IN FINNISH LIVESTOCK HERDS USING LIVESTOCK GUARDING DOGS (LGD)

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### SUMMARY

Phase 1 of studying a cost-effective method of protecting livestock with LGD for Northern Europe and the Baltic Sea Area included contacting early LGD adopters, semi-structured interviews and in-site-visits to Finnish farms in summer 2006. 4 farms located in traditional large carnivore areas in eastern and 4 in central parts of Finland. Total numbers of dogs were 31 including 19 LGDs (1–4 per farm) of 8 different breeds. The experiences were encouraging: no predation since LGD(s) presence, only minor difficulties. Herding dogs and LGDs got along acceptably. LGDs had also multifunctional influence e.g. increasing the general feeling of security.

**Keywords:** livestock, livestock guarding dogs, carnivore damages, wolves

### INTRODUCTION

Successful pasturing is essential in cattle breeding both from an economic and cattle welfare point-of-view. (e.g. European Convention for the protection of animals kept for farming purposes, CETS No.87). For organic farming the principles of natural and sustainable measures are important due to reputation factors as well as regulation factors (Council Regulation (EEC) No 2092/91).

In the latest decades the populations of wolf, bear and other large carnivores have increased and expanded towards more inhabited areas in all of Europe (Management Plan for the Wolf Population in Finland, MMM 2005). The amounts of damage of pasturing livestock and hunting dogs are increasing. The management of wolves and other large carnivores (except the reindeer herding area in northern Finland) is regulated by the EU nature directive attachment IV. Measures for prevention of wolf and other large carnivore damages have been supported from state finances. The methods used in Finland so far have included fencing of pastures, dog yards and wolf phone service. Farms have started spontaneously to acquire LGDs. At the same time the pedigree dog registration statistics of the Finnish Kennel Club also shows increasing numbers of LGDs. However there is no exact knowledge of the numbers of LGDs already used for livestock protection in Finland. Thus, it is important to explore the suitability and cost effectiveness of this method of damage prevention.

LGDs have been used for centuries. They work by staying with the livestock and driving away intruders, any need for physical conflict rarely occurs (Rigg 2004). Often there is a need for more than one dog to keep up the necessary level of protection. In United States, LGDs have been introduced as a new method of guarding flocks. Research was initiated during the late 1970's by

several organizations to evaluate the use of guarding dogs to protect livestock from coyotes (*Canis latrans*) and dogs. In general LGDs were capable of reducing predation on sheep in a variety of management systems. (Linhart et al. 1979; Mc Grew and Blakesley 1982; Coppinger et al. 1983; Green and Woodruff 1983a, 1983b; Black and Green 1985).

There is no LGD tradition in Finland, partly due to the fact that there has not been any need for extensive protection against large carnivores during the last decades. As the amount of wolf damages towards flocks and hunting dogs increase, exploring possibilities of using LGDs becomes even more important (Dawydiak & Sims 2004).

In the Nordic countries, the use of LGDs for protecting sheep has been tested in Norway (Hansen and Smith 1999). However, Norwegian methods are not directly applicable to Finnish conditions as Norwegian sheep are widely dispersed on an open range. In Sweden, the testing of LGDs in electric fenced areas has started recently (Levin 2005).

LGDs should be kept with, brought up with, socialised with and bonded with the stock it is going to protect (Coppinger 1992). As the pasturing season lasts only half the year in Finland, it is especially important to find the correct balance between the dog's level of bonding to the family and to the livestock. Moreover, LGDs need proper basic obedience training and the dog needs to be socialized to people and to places outside its own territory (Davydiak & Sims 2004, Koljonen 2002). Also it should be paid attention to so called everyman's right i.e. the public right of access to forests and other land enacted by Finnish law.

The price for a LGD pup bred in Finland is approximately 1000 € and for an imported one approximately 1500 €. Taking into consideration all costs for food, vaccinations, maintenance and for possible insurance and healthcare yearly costs are approximately 500–1000 €, depending on the health status of the dog (Management Plan for the Wolf Population in Finland, MMM 2005).

Purchasing Livestock Guarding Dogs to protect livestock in wolf areas is recommended in the environmental vision of the Finnish Kennel Club strategy for 2003–2012 (SKL 2003). There would surely be a need for livestock guarding dogs, if knowledge about the dogs and the possibilities of using them would reach the people who need a trustable guard for their livestock or property (Koljonen 2002).

## OBJECTIVES

The goals of the study are to find the most cost-effective method of protecting livestock with LGD. In addition, the aim is to produce objective information for livestock owners and other stakeholders of breeds/breed lines and LGD behavioural qualities suitable for the Northern Europe and Baltic Sea Area conditions.

## METHODS

Phase 1 of the study included semi-structured interviews based on a questionnaire, in-site-visits to farms in the summer of 2006 and contacting stakeholders as well as theoretical reviewing. The media of recruiting the farms was through newspaper and web site announcements. Early LGD adopters were contacted and variables to be included in future studies were explored. The emphasis was on the socialization of the dogs and on estimating the pros and cons of using LGDs for guarding pastures typical to the target area conditions.

## EXPERIMENTAL DATA AND RESULTS

A total of 12 farms replied and of these 8 were included in the study. Selection criteria included that the farms actually used or have acquired their LGDs as working livestock guarding dogs, although exclusively full time working was not required. The total farm area varied between 2 and 77 ha (median 48,5 ha). Geographically 4 farms were located in traditional large carnivore areas in eastern and 4 in central parts of Finland. Of the farms one was located in the middle of the village, 5 farther from other houses and 2 in isolation in the middle of forest. Distances from the farms to neighbours varied between 0,02 and 6 km (median 0,3 km).

The number of residents on the farms was 29 in total, including 14 women and 15 men. The age range was 1 to 60 years (median 31) and included 10 children. Visitors or other people simply passing the farm depending of the season were e.g. neighbours, cyclists, mopedists, cars etc. passing via village roads. Because of the public right of access in surroundings of the farms can be also people going to pick berries, people jogging, skiers, snowmobilers, hunters or tourists.

Of the farms 7 kept sheep, 7 poultry, 1 dairy cattle, 1 beef cattle, 4 horses and 1 bees. The sample also included one horticulture farm, which was only starting to rear alpacas, currently owning one male and one female. The livestock breeds on the farms included Finn sheep (6 farms), Finn hens (6 farms) and Finn horses (3 farms). The LGDs' guarding areas thus included several kinds of fence types: electric fence (5), light electric fence (1), sheep fence (6), wolf fence (3), wooden fence (1) and no fence (2).

The total number of dogs was 31, varying between 2 and 7 per farm (median 4), from which 1 to 4 dogs were LGDs (median 2). Thus the total of LGDs was 19, of which 18 were working dogs. The number of different LGD breeds was 8 and included Caucasian Ovcharka, Central-Asian Ovcharka, Great Pyrenees, Komondor, Tibetan Mastiff, Maremma Sheepdog, Polish Tatra Sheepdog and Slovakian Cuvac. Of all the LGDs only 2 had been imported from abroad: one Komondor from Hungary and one Tibetan Mastiff from USA, while the rest have been bought from Finnish breeders. None of the LGDs had parents as working dogs. The farmers had acquired information about LGDs from books (5), breeders (4), internet (4), newspapers (3), pedigree dog association (2), the Finnish Kennel Club (1) and from another LGD owner (1). On all farms people had earlier experience of dogs and 4 had long term dog owner experience.

The main reason for acquiring the dogs were carnivore damages (2 farms) and continuous daily or weekly large carnivore observations (6 farms). Thus, on all every farms the residents had perceived danger of meeting large carnivores in their yard or in the neighbourhoods. The individual LGDs were chosen on the basis of gender or recommendation of the breeder, appearance and estimated character. However, only two puppies had been aptitude tested. The gender distribution of the dogs was 9 females, 9 males and 1 sterilized male.

According to the owners' estimations the guarding abilities first occurred at and age of 4 to 20 (median 12 months), depending on the breed and on the dog's personality. The season for bonding the LGDs to the livestock was spring (5), summer (6), autumn (1) and winter (6). The age for starting the bonding process varied from birth to 32 weeks (median 8 weeks). Bonding occurred mainly on pastures and partly in the sheep house with 4 LGDs. Owners answered to gain more excellent behaviour in relation to that amount they invested time or other effort for socialization process or human tolerance training.

In 3 farms guarding took place merely at nights. Only in one farm was a special high fence ought to stop dogs wandering, in other farms the fences did not hinder dogs passing trough. There were a few minor difficulties in inter-animal relationships (playing, chasing etc.). Herding dogs and LGDs got along acceptably.

The experiences of early LGD adopters were encouraging: all the farms that answered had gained from having LGDs and no-one reported damages after the dogs were introduced. The dogs had prevented some attacks or other damages.

Frequency table					
Characters of wild animal situations in numbers of farms.					
Wild animal	Observations	Meetings	Damages before LGDs	Estimated prevented damages	Damages when LGDs
Wolf	7	1	1	2	0
Bear	6	2	0	1	0
Lynx	5	0	1	1	0
Fox	2	1	0	0	0
Dog	1	0	1	0	0
Elk	3	3	2	2	0
White-tailed deer	1	1	1	1	0

Other benefits mentioned were the termination of elk damages to pasture fences and of damage by white-tailed deer to horticultural plants. In addition, the presence of LGDs had a more multifunctional character by increasing personal feelings of security in a comprehensive way. This included issues like how freely children can be permitted to be outdoors and feelings of companionship. LGDs also enhanced social networking, e.g. through so called coop-LGDs, aiming to help also neighbours with guarding. In the future, 7 of the farms are going to continue using LGDs; one dog was too young for evaluation. No LGD owner mentioned the price or maintenance costs as a disadvantage or problem.

The semi-structured questions focused on three main topics when considering possible benefits and disadvantages: people, dogs and general conditions on the farms. These first findings showed no direct disadvantages of LGDs. On the contrary, advantages mentioned were versatile. However the follow-up contacts during the year indicated some possible questions, regarding one dog not turning out as hoped (wandering too much) and one dog having a suboptimal relation to other animals (playing and chasing). As had been found before, a successful bonding with the stock the dog is going to protect is vital to successful guarding (Davydiak & Sims 2004).

## CONCLUSIONS

The aim of the semi-structured in-site visit study was to identify possibilities and problems associated with LGDs. The experiences of early LGD adopters were encouraging: all farms answered have gained from the dogs. The results to take account from this phase of the study were: the need for additional fencing seems not to be essential; various LGD breeds are possible, as well as it seem to be no obvious constraints on a certain species of livestock or other domestic animals to be guarded. LGDs guarding abilities could be used in varied way additionally to traditional full time guarding on pastures on open landscapes. Integrated use could also be part-time protecting and LGD's use together with wolf fences but also focusing to guarding farm property etc. at yards.

The puppy or adolescent time seems to be most important factor when sizing up the dogs guarding career. By means of puppy video-taped aptitude testing is possible to analyse and follow LGDs progress from the start. The two mild question cases showed however that there can be

problems to deal with when the using of LGDs increases. Also the relationships of traits like human tolerance and guarding behaviour of some LGD breeds may affect the selection and success of LGD. The coexistence of LGDs and herding dogs on the same farm is important as larger livestock herds can demand the use of both dog types.

Minimizing the carnivore damages or as importantly the fears of people is a multifunctional study topic. In summary the themes or factors were: dogs welfare in guarding job, people in and outside the farms, public opinion in nature relations, cost-effectiveness, cultural, socio-economic and stakeholder relations in general. Both tentative discussions and contacts from new LGD owners together are demonstrating spontaneous way to solve problems caused by carnivores. Stakeholder-work embodied also establishing good working relationships with local communities. For future research continuation the multidimensionality is to be emphasized.

## REFERENCES

- Black, H.L. and Green, J.S.: Navajo use of mixed-breed dogs for management of predators. *J. Range Manage.* 38: 11–15, 1985.
- Coppinger, L.: Sheepdog environments in the Old World. *Dog Log. Livestock Guard Dog Association* 2: 12–14, 1992.
- Coppinger, R., Lorenz, J. and Coppinger, L.: Introducing livestock guarding dogs to sheep and goat producers, p. 129–132. In: D.J. Decker (ed.), *Proc. first eastern wildl. Damage control conf.*, Cornell Univ., Ithaca, N.Y., 1983.
- Council Regulation (EEC) No 2092/91.
- Dawydiak, O. and Sims, D.: *Livestock Protection Dogs – Selection, Care and Training*. Second Edition. Alpine Blue Ribbon Books, Loveland Colorado, 2004.
- European Convention for the protection of animals kept for farming purposes, CETS No.87.
- Green, J.S. and Woodruff, R.A.: The use of three breeds of dog to protect rangeland sheep from predators. *Appl. An. Ethol.* 11: 141–161, 1983a.
- Green, J.S. and Woodruff, R.A.: The use of Eurasian dogs to protect sheep from predators in North America: a summary of research at the U.S. Sheep Experiment Station, p. 119–124. In: D.J. Decker (ed.), *Proc. first eastern wildl. Damage control conf.*, Cornell, Univ., Ithaca, N.Y., 1983b.
- Hansen, J. and Smith, M-E.: Livestock Guarding dogs in Norway part II: different working regimes. *J. Range Manage.* 52 (4): 312–316, 1999.
- Koljonen, K.: *Laumanvartijakoirat*, 2002.
- Levin, M.: *Livestock Guarding Dogs in Sweden: a Preliminary Report*. *Carnivore Damage Prevention News* 8/2005.
- Linhart, S.B., Sterner, R.T., Carrigan, T.C. and Henne, D.R.: Komondor guard dogs reduce sheep losses to coyotes: a preliminary evaluation. *J. Range Manage.* 35: 238–241, 1979.
- Management Plan for the Wolf Population in Finland, MMM 2005.
- McGrew, J.C. and Blakesley, C.S.: How Komondor dogs reduce sheep losses to coyotes. *J. Range Manage.* 35: 693–696, 1982.
- Rigg, R.: The extent of predation on livestock by large carnivores in Slovakia and mitigating carnivore-human conflict using livestock guarding dogs. MSc. Thesis, University of Aberdeen, 2004.
- SKL: Kennelliiton toimintastrategia 2003–2012: 1.3 Ympäristövisio 2003–2012. *Koiramme* 7–8: 88–89, 2003.