

## **Sheep production and Stray dogs attacks in Beira Interior – Portugal**

**Várzea Rodrigues, J., Pinto Andrade, L., Carvalho, J., Ferreira, A.,  
Alberto, D. & Monteiro, J.**

ESA-Instituto Politécnico Castelo Branco - Qta Sr.<sup>a</sup> Mércules  
6001-909 Castelo Branco - Portugal  
[luispa@esa.ipcb.pt](mailto:luispa@esa.ipcb.pt)

### **ABSTRACT**

Livestock production in extensive and semi extensive systems (mainly with sheep) is faced with a high level of attacks/predation done by stray dogs, wolves or other carnivores. In the region is recognised sheep predation by stray dogs; foxes and Egyptian mongooses also attack lambs.

The incidence of attacks in livestock animals was evaluated in Beira Interior, Portugal, based on inquiries (n=156) with the last actualisation in 2007.

Results show that:

- In 63% of the inquired farms, with 78% of the inquired area and 76% of the total livestock, had at least one attack observed or attributed to the responsibility of stray dogs;
- The average area and flock in farms with attacks are higher than in farms without attacks;
- Incidence of dead and injured sheep: 3/inquire/year and 4,8/farm with attack/year.

The legal mechanisms of dogs capture aren't efficient. As a reaction, farmers use the shooting as a control method. Other methods aren't referred, but it is possible to verify the presence of dead Livestock Guardian Dogs by poison and sliding knots. These defence methods acts not only in dogs, but as well in wild carnivore species and scavengers, limiting or blocking the hypothesis of territorial reoccupation by wolf in a region considered as natural expansion area.

### **INTRODUCTION**

Livestock are submitted to predation, done by wild species and inclusively by domestic species.

We pretend, for the study area, to identify the main predatory species, the defence mechanisms used by livestock owners in extensive and semi intensive production systems and as well to quantify the economic consequences of predation.

The study area is potentially a wolf expansion territory. The predatory aggression done by stray dogs and the mechanisms of defence used could be limitative to the territorial reoccupation of wild species.

### **MATERIAL AND METHODS**

The presented data was based on 156 inquired farms, with the last actualisation done in 2007 (LIFE04NAT/IT/000144), distributed by 16 counties of the interior centre of Portugal.

The inquired farms represent:

- An area of 29.640,5 ha (within 2 and 1500 ha);
- A total livestock of 50.094 animals (from 10 to 2000 animals/farms)
- Breeding Sheep numbers are 46.767 animals, allocated in 151 of the inquired farms (Table1).

Table 1. - General characterisation of areas, animals and altitude of the 156 inquired farms

	Inquired area (ha)	Total Sheep	Total S+C+G	Altitude (m)
Total	29.640,5	46.767	50.094,0	-
Average	190,0	299,8	321,1	537,8
[Min – Max]	[2-1.500]	[0-2.000]	[10-2000]	[168-1854]

Note: S- sheep; C – cattle; G - goat

Main methodological options:

- It was considered attack, whenever the presence of death/injured animals was registered;
- Situations of animal's dispersion associated to the disappearance without animal trace, was not considered;
- For data treatment, we had only considered livestock attacks done or attributed to stray dogs.

## RESULTS AND DISCUSSION

Predatory actions not exerted by stray dogs were not accounted on the evaluation of the predatory impact. They are considered residuals or are not quantified by the inquiries.

In the study area is recognised the predation done by foxes (*Vulpes vulpes*) and Egyptian mongooses (*Herpestes ichneumon*) on lambs, but it's impact is marginal since it is small.

Objectively, only predation done by abandoned or stray dogs (*Canis lupus familiaris*), in sheep (adult and young) deserve special attention.

### 1- Stray dog attacks incidence

In 62,8% of the inquired farms representing 77,9% of the area and 76,1% of the total livestock, at least one attack in sheep had occurred in the studied period (Table 2).

Table 2 – Stray dog attacks incidence and characteristics of farms with (WA) and without attacks (NA)

	n	%	Inquired Area (ha)	Av. Area farm/ha	Total sheep	N°sheep /farm	Total sheep	Av. Livestock/farm
Farm WA	98	62,8	23081,0	235,5 <sup>b</sup>	36545	372,9 <sup>b</sup>	38111	388,9 <sup>b</sup>
Farm NA	58	37,2	6559,5	113,1 <sup>a</sup>	10222	176,2 <sup>a</sup>	11983	206,6 <sup>a</sup>
Total Inquired Farm	156	100,0	29640,5	190,0	46767	299,8	50094	321,1

Note: Av- average; Farm with attacks (Farm WA); farms without attacks (Farms NA)

The results show us that:

- Only 1/3 of the inquired farms did not had problems with stray dogs attacks;
- More than ¾ of the studied area and the total livestock had been attacked;

- The average area of farms (113,1 vs. 235,5 ha) and the average size of livestock (206,6 vs. 388,9 of the total livestock figures or 176,2 vs. 372,9 breeding sheep) are significantly higher in farms with attacks WA.

Is becoming evident the fact that bigger farms with a large livestock animals show a higher susceptibility to stray dogs attacks. The reason lines on the lower human presence in extensive production systems and as well on the distance were they graze far away from the locals of more intense human activity.

## 2- Economical consequences of the attacks

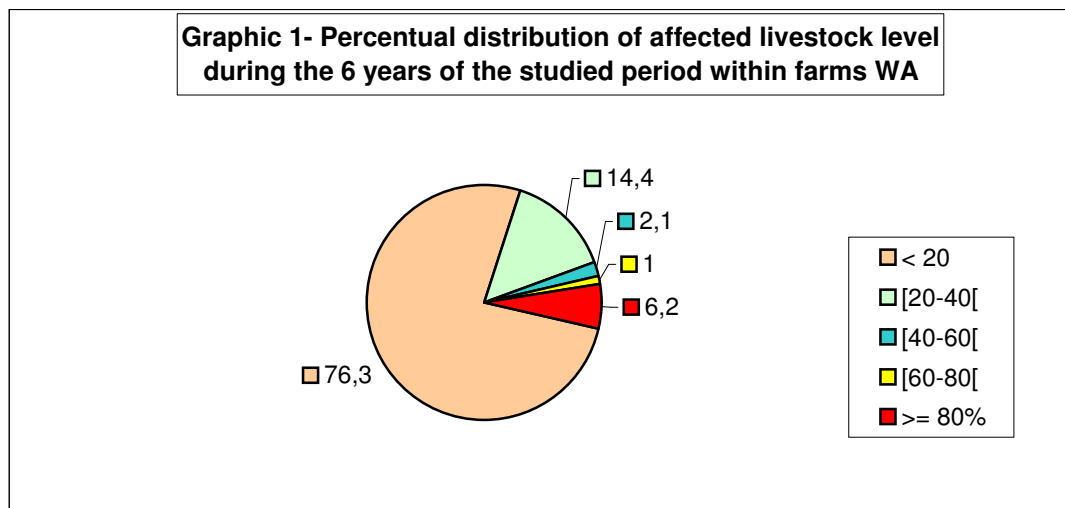
In average each inquired farm has lost 21 sheep, 17,1 dead (D) and 3,9 injured (I), by dogs attacks. If we report only to farms WA, these values rise to 27,2 and 6,3 respectively (Table 3).

Table 3- Death and injured sheep in inquired farms and in farms with attacks

	n	D + I Sheep/farm	Dead Sheep /farm	Injured Sheep/farm	D + I Sheep /farm/year
Farms WA	98	33,5	27,2	6,3	5,58
Total inq. farms	156	21,0	17,1	3,9	3,50

These results represents an annual average loss of 1,2% of livestock in the inquired farms or 1,5% of livestock submitted to attack.

However, almost 10% of the farms WA had their livestock affected in more than 40%, in the six years of the studied period. More than 6% of the farms WA had suffered changes in livestock more and equal than 80%, as the result of dog's predation (Graphic 1)



Results show a sub evaluation of the injured sheep. The ratio I/D sheep is 0,23/1, when the same ratio, done on attacks were control was made was 2,3/1. This sub evaluation is also observable in the inquires, when 36,7% of the farmers with livestock attack, refers the number of dead sheep, but they did not report any injured animal.

Two possible explanations:

- Injured sheep implies veterinary care and expensive treatments; mostly these animals die and are accounted as dead;

- Injured sheep with lesions under the wool and not visible and not immediately incapacitated are not accounted; these animals are often associated to predictable future costs due to a lower productivity.

From an economic point of view, we could refer that the studied farms show an economic loss of 32760 €/year. A valuation of the losses done by dogs attacks changes between 291000 €/year for the total sheep livestock in the studied area and 317000 €/year for the total livestock in Beira Interior (BI) Region (Table 4), assuming that the attack incidence is equal to the one in the studied area.

Table 4 – Losses and economic valuation of losses done by dog's attacks to sheep livestock.

	Studied Sheep livestock	Total Sheep livestock in the studied ara	Total Sheep livestock in the BI region
Sheep livestock	46767	414730	452098
Avg. loss/year	546	4842	5278
Comercial loss Valorization (€)	32760	290518	316700

Other costs than the valorisation of commercial animal's replacement are not considered. However, treatment costs, medicines, hand labour and loss of productivity of injured animals should be added.

### 3- Control mechanisms against dog's attacks

Several mechanisms of defences or control of stray dogs are used, like livestock guardian dogs and also dog's capturing.

In practice, farmers do dog's population control by gun shooting.

Half of the farmers that answered the inquire and the actualisation uses the gun shooting to kill dogs (48,5% control by shooting and 51,1% does not shoot) (Table 5)

Table 5- Gun shooting control of stray dogs in farms WA and NA

	%	Farms WA (%)	Farms NA (%)
Control by shooting	48,9	81,8	18,2
Does not shoot	51,5	49,3	50,7

Almost 82% of the farms that control dogs by gun shooting had been attacked; 18,2% do it as preventive way. Half of the farms that do not control stray dogs by shooting refer dogs' predation.

There are practices still less convenient for wildlife. None of the inquired farmers assumes that uses poison or sliding knots as a prevention method against stray dog's attacks.

However, and indirectly, 9% of the inquired farmers refuses to receive livestock guardian dogs, since they had negative previously experiences in which their dogs have been killed by poison or sliding knots.

Even if not recognised, the use of poison and sliding knots still exists.

### CONCLUSIONS

Stray dogs are a real problem in Beira Interior region and they are responsible for damages (economical losses) in many farms. Not accounted in the study, there are an aggregate of costs and losses of revenue, which worsen the presented values.

There are several mechanisms of stray dog's population control. The most adequate, and legally defined and that involves the dog's capturing are not implemented. All the other possible ones are less convenient for wildlife.

The annual economic losses and the interest that wildlife could reoccupy territory, could justify the study and the evaluation of alternatives of livestock defence, diminishing the dogs attacks impact and protecting against the wolf. Several measures are under evaluation: electric fences and livestock guardian dogs. However, it is fundamental to implement the legal systems of dogs' collect/capture in rural areas and eliminate the use of poison and sliding knots, as well as, to reduce to the minimum the need to use gun shooting as a way to control stray dog's population.

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