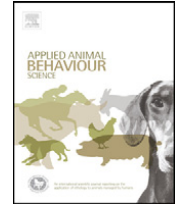




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Farm characteristics in Slovene wolf habitat related to attacks on sheep

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ABSTRACT

We aimed to characterize differences between sheep farms in wolf habitat in Slovenia that either suffered from wolf attacks ($n=30$) or not ($n=30$) during the pasture seasons 2008–2010. Main pasture season was from April until November. Median fenced pastures were 2.7 ha and herd size was 93 sheep. The three-year period contained 288 attacks, mostly occurring in May (36), and secondly peaking in October (23). 78% of all attacks occurred at night. Significantly fewer non-attacked than attacked farms had mixed herds (17% versus 40%). Wolves killed a median of 4 sheep per attack. If herds included goats, 2 goats could be killed in addition. Sheep were driven to a night facility before dusk by 43% of non-attacked farmers, and significantly fewer attacked farms (10%). Significantly fewer attacked than non-attacked farms kept sheep in closed night barns or a separately fenced night-area (20% versus 50%). Guarding dogs (usually 2 per herd) were kept by 53% attacked and 43% non-attacked farms. Average fence height was 115 cm and did not differ between attacked or non-attacked farms. 87% non-attacked farms had wire-mesh fences (either electric or not) instead of fences with horizontal single wires, which was significantly more than at attacked farms (61%). Significantly more attacked (89%) than non-attacked farms (60%) had electric fences (mobile or fixed, fixed ones could be combined with physical fences). In spite of farmers using electric fences, annual attack number was significantly higher at farms with a history of wolf attacks than at new farms (4 versus 1). Electric fences or guarding dogs as used in the study area proved ineffective: they did not prevent wolf attacks or reduce killing rates. Adoption of mesh instead of single wires, polarity alternation of live with ground wires in electric fences, and fences higher than 145 cm seem improvements. However, potentially, improved fencing could also prevent sheep from breaking out, if wolves have found ways to enter the fenced area, and might result in surplus killing. Alternative strategies are: (1) to keep sheep in closed night barns and to move sheep there before dusk and (2) to research (a) wolf attack rates and feasibility of separating sheep and goat herds; (b) sheep and goat responses to predator attacks and methods that assist sheep and goats to avoid being attacked; (c) wolf deterring methods focused on systematic negative reinforcement of chasing and consumption of livestock.

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1. Introduction

In Slovenia, 85% of the whole territory is considered less favoured area for agriculture (Rural Development

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