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1 **Discussion point**

2 **Prevention of sheep worrying in the UK: Rethinking the approach**

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12 Keyword: Sheep, Worrying, Dogs, Prevention

13

14 **Introduction**

15 Livestock worrying occurs when dogs attack or chase livestock, and also describes

16 dogs simply being at large in a field containing livestock (Dogs (Protection of

17 Livestock) Act, 1953). Under this act if a dog worries livestock the person in charge of

18 the dog is guilty of an offence and may risk prosecution. Owners may also be liable to

19 pay compensation to farmers for livestock deaths or injuries (Animals Act, 1971).

20 Farmers may also shoot dogs which are attacking or chasing livestock (Animal Act,

21 1971). Worrying can have a significant impact on livestock as pregnant ewes may

22 abort lambs and worrying can cause significant injury, mis-mothering, suffering and

23 even death (Phythian et al., 2011; National Sheep Association, 2016). From the

24 farmer's perspective, attacks on livestock also cause various problems including

25 stress, anxiety, concerns about reduced animal welfare and financial losses (National
26 Sheep Association, 2016).

27

28 Livestock worrying has been frequently noted in past years within the UK (e.g.,
29 Ainsley, 1968) and to date continues to remain commonplace (Stocker et al., 2015). A
30 general increase in the annual incidents of dog worrying was recorded by police forces
31 from 2011-2015 (e.g., 2011: 691 cases; 2012: 738 cases; 2013: 1074 cases; 2014:
32 1002 cases; 2015: 1069 cases) (National Sheep Association, n.d.-a). It is important to
33 note that these figures are likely to be lower than the actual occurrence due to under-
34 reporting by farmers (e.g., only 37% of sheep farmers were noted to contact the police
35 every time they have an attack) (National Sheep Association, 2016) and not all cases
36 are evident in police reports (National Sheep Association, n.d.-a). Recently, the
37 National Farmers Union Scotland also stated that an increase in livestock worrying
38 incidents from 93 to 133 occurred from 2014-2015 (NFU Scotland, 2016). The National
39 Sheep Association's 2016 survey highlighted that 33% of farmers suffered between
40 two and five attacks each year (with some respondents encountering 50-100 or even
41 greater incidents) with on average five sheep being injured and four sheep being killed
42 (National Sheep Association, 2016).

43

44 Method

45 To further investigate the recent incidence of sheep worrying as a result of dog attacks
46 in 2016, the authors searched and reviewed online news articles, through Google
47 news (UK pages only) in local and national news within the UK. The search terms
48 were ('Sheep' OR 'Livestock') AND ('Worrying') AND ('Dog').

49

50 Results and Discussion

51 In total 20 news articles were found between January and July 2016. Of those articles
52 which provided specific figures, 217 sheep in total were killed (average 11.4; ranging
53 from 0 – 116 per incident) and 22 sheep in total were injured (average 1.8; ranging
54 from 0 – 6 per incident). Of those sheep injured, the main body locations were the
55 neck, shoulders and legs. In the majority of these cases (15/20) the owners or dog
56 could not be located. For three of the incidents an individual was charged by the police.
57 In two cases the dogs involved were shot as a result of attacking sheep. Of the 20
58 incidents, seven occurred in March, four in April, four in June, two in February, two in
59 July and one in January. This pattern is possibly representative of seasonal patterns
60 resulting in an increase in dog walking in rural locations, or associated with the
61 presence of lambs which could spur attacks by dogs. A concerning aspect of these
62 news articles is that in four cases it was stated that these incidents of sheep worrying
63 had occurred at the location on multiple previous occasions.

64

65 There is a key focus on methods to prevent livestock worrying. The National Sheep
66 Association (2016) found that 64% of sheep farmers put warning posters/signs up on
67 their land stating that dogs need to be kept on the lead. However, previous research
68 suggests that online advice of best practice may vary for dog walkers in fields where
69 livestock are kept (Fraser-Williams et al., 2015). Additional prevention methods and
70 campaigns have included the Kennel Club and the National Farmers Union
71 collaborating to provide information to dog owners (NFU, 2015). This has included the
72 utilisation of signs and posters informing walkers of the need to place their dogs on a
73 lead. Similarly, the National Sheep Association have also issued guidance for farmers
74 (National Sheep Association, n.d.-b) and provided plastic signs free of charge,

75 highlighting the need to keep dogs on a lead and noting that permitting dogs to chase
76 or attack sheep is a serious welfare offence (National Sheep Association, n.d.-c). In
77 addition, the National Sheep Association, in conjunction with the Sheep Veterinary
78 Society and Farmers Guardian produced a poster for veterinary surgeries highlighting
79 that livestock worrying is a criminal offence which may result in fines or prosecution,
80 the welfare implications for sheep and that the dog may be shot or destroyed (National
81 Sheep Association, n.d.-c; Stocker et al., 2015). Initiatives such as 'SheepWatch UK'
82 have also been set up to record dog attacks on sheep, investigate the cost of such
83 attacks and aim to educate the public (Sheepwatch UK, n.d.). Despite these efforts,
84 incidents of sheep worrying are a frequent occurrence.

85

86 Owner awareness and understanding of the impact of livestock worrying is a
87 fundamental factor in preventing these incidents. Despite current campaigns,
88 continuing education to improve awareness and compliance is needed for dog owners
89 to ensure that dogs are kept on leads when near to livestock and that owners are
90 aware of where their dogs are at all times. Further consideration of how best to prevent
91 sheep worrying would be beneficial. Currently prevention materials tend to
92 predominantly focus on the dangers of fines and prosecution, and on sheep welfare
93 (NFU, 2015; National Sheep Association, n.d.-c). While these are important
94 considerations, increased focus on the dangers to the dog in terms of being shot or
95 having a destruction order placed on them may be beneficial in increasing owner
96 concern. Over 305 dogs have been killed by farmers for livestock worrying over the
97 past six years in England and Wales, with an average of one dog a week being shot
98 (BBC news, 2016). Whilst dog owners may oppose measures that are perceived to

99 restrict the freedom of their pets (e.g., Williams et al., 2009), concern over the loss of
100 their dog may encourage compliance with leashing.

101

102 Another method that may encourage greater leashing of dogs around sheep may
103 relate to strategies that encourage compliance with social norms or pro-social
104 behaviour. Compliance with social norms can encourage owners to clean up their
105 dog's faeces (Webley and Siviter, 2000; Lowe et al., 2014). Dog owners are also more
106 likely to keep dogs on their leads when they believe others expect their dogs to be
107 leashed (e.g., Williams et al., 2009). Greater focus on promoting the concept that most
108 dog owners keep their dogs on leads when walking near sheep, and that doing so is
109 an important aspect of responsible pet ownership may be of value. Adapting signs to
110 encourage prosocial behaviour may also be useful. Images of watching eyes can
111 reduce the occurrence of antisocial behaviour such as littering (Ernest-Jones et al.,
112 2011; Bateson et al., 2013) and bicycle theft (Nettle et al, 2012). Incorporation of
113 watching eye images on preventative signs and posters may also be useful in this
114 context.

115

116 A further consideration could involve making dog owners better consider the threat
117 that their dog poses to the sheep. The National Sheep Association (2016) found that
118 farmers believed that one of the most common causes of sheep worrying was owners
119 not thinking that their dog would attack or chase livestock. There is a danger that while
120 owners may recognise that dogs in general pose a threat to other animals, they do not
121 believe this to be true of their own dog. Owners may feel more compelled to keep their
122 dog on a lead when they better recognise that their dog represents a threat to other
123 animals (Williams et al, 2009). Greater owner education and a focus in preventative

124 materials on ensuring that owners recognise the dangers posed by their dog to sheep
125 may be beneficial and help to combat the potential belief by owners that their own dog
126 is different and not a threat.

127

128 In contrast to sheep worrying, livestock guarding dogs are currently used to protect
129 livestock on farms in a number of countries and have been found to be a highly
130 efficient, environmentally friendly and non-lethal method of protecting livestock (van
131 Brommel and Johnson, 2015; Potgieter et al., 2015). However, to the authors'
132 knowledge minimal research has investigated the use of these dogs in the UK and
133 how effective they are.

134

135 In conclusion, further investigation is needed into methods to prevent livestock
136 worrying. Consideration and testing of the efficacy of new prevention materials and
137 approaches is important. Systematic study of how best to appropriately inform dog
138 walkers of the risks and dangers of worrying, as well as exploration of dog owners'
139 perception of the likelihood, outcomes and prevalence of worrying is warranted. The
140 death rate of ewes and lambs, as well as the rate of incidence, also needs to be
141 accurately assessed and the economic effects of these rates highlighted within the
142 UK. Assessment of police and local council support provided for worrying would also
143 be beneficial. Further study of worrying could also be undertaken with sheep farmers
144 to investigate this topic in more detail. Gathering information ranging from qualitative
145 interviews into the impacts of worrying on farmers (e.g., both psychological and
146 financial) to in-depth quantitative records of incidents, e.g., such as farm information
147 (size, set-up, security, fencing type, etcetera), location (public paths through/near farm

148 and distance, footfall), frequency of previous incidents, identification of cause of attack,
149 and prevention methods used will be helpful in elucidating the scale of the problem.

150

151 Conflict of interest: None

152

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156

157 **Reference**

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