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The incidence and impact of dog attacks on guide dogs in the UK: An update

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Abstract

Data on dog attacks on Guide Dogs’ stock were reviewed to investigate the characteristics of the attacks. An average of 11.2 attacks occurred each month. Nearly all of the attacks occurred in public areas, 68.4% of victim dogs were qualified guide dogs and 55.5% of victim dogs were working in harness when they were attacked. Guide Dogs’ stock were injured in 43.2% of attacks and veterinary costs for attacks were estimated at £34,514.30. Over 40% of qualified guide dogs’ working ability was affected and more than 20% of qualified guide dogs required some time off from working after a dog attack. Twenty dogs were permanently withdrawn from the Guide Dogs’ programme as a result of dog attacks, 13 of which were qualified and working with guide dog owners at the time of the withdrawal; this resulted in a financial cost of over £600,000 to the charity. More importantly perhaps, temporary and permanent withdrawals have a significant impact upon the mobility and independence of guide dog owners and in many cases significantly impacted their emotional wellbeing.
Keywords: guide dogs, intraspecific aggression, dog attack, canine aggression

Introduction

A study published in the Veterinary Record in 2010 detailed the number, severity and consequences of reported dog attacks on guide dogs in the UK along with the characteristics of the aggressors and victims and details of the attacks (Brooks and others 2010). The data were based on 100 attacks on Guide Dogs’ stock that had been reported between November 2006 and April 2009. Other published studies have investigated dog aggression, but more commonly that directed towards humans, especially children (Lockwood 1995; Reisner and Schofer 2008; Casey and others 2014). Existing studies into inter-dog aggression have examined risk factors and characteristics of the dogs and their owners (Roll and Unshelm 1997, Shamir and others 2002, Baranyiova and others 2003, Řezáč and others, 2011). Casey and others (2012) reported findings from a questionnaire of dog owners and found that more than 20% of 3,897 dogs had shown, or were currently showing, aggression to unfamiliar dogs when outside of the house.

Guide Dogs has continued to record dog attacks on their stock and has used this information to successfully campaign for changes in the law. In March 2014 the Anti-Social Behaviour, Crime and Policing Act was passed which means that a dog attack on a trained assistance dog will be treated as an aggravated offence with sentences of up to three years imprisonment for the attacking dog’s owner (Guide Dogs 2014a).
There are approximately 4,900 working guide dogs in the UK, each of which is supported by Guide Dogs. Attacks on working guide dogs can markedly affect the guide dog owner, leading to a loss of their mobility, a reduced quality of life, and a negative impact on their wellbeing (Godley and Gillard 2011; Marquès-Brocksopp 2015) and attacks can also have financial implications for the charity; the lifetime investment in each guide dog is approximately £50,000. This study aimed to provide up to date information on the number of dog attacks on Guide Dogs’ stock in the UK and investigate the characteristics of the attacks, focussing specifically on the injuries to dogs and the financial implications for Guide Dogs.

Materials and methods

Data have been reviewed for all dog attacks on Guide Dogs’ stock (8,750 dogs correct as of 08 April 2015) reported between 01 June 2010 and 28 February 2015. A dog attack for the purposes of this study was defined as ‘When a dog sets upon another dog in a forceful, violent, hostile or aggressive way, involving physical contact’. Dog attacks were reported to Guide Dogs by the victim dogs’ handlers using a specially designed report form. Extensive data were gathered for each attack using the report form and included: (a) attack details: location, whether witness details were obtained and the cause of the attack as determined and described by the victim dog’s handler; (b) the aggressor(s): breed, gender, age and details of owner control of the aggressor prior to the attack; (c) the victim: breed, gender, age, colour, stage of training or work and activity prior to the attack; (d) impacts on the victim dog reported by the victim dog’s handler: injuries, whether veterinary attention was required, the locations of injuries to dogs and the effects on working life; (e) impacts on people: injuries and whether medical attention was
required and effects on the emotional well-being of the victim’s handler; and (f) veterinary costs and (g) estimated costs of dogs withdrawn from the programme.

The proportions of victims that were each breed, sex and colour were compared to the data for the whole Guide Dogs’ population correct as of 08 April 2015 (n=8,750 dogs) and any large variations were highlighted. Comparisons of victim and aggressor breed, sex and colour were carried out to identify factors impacting the severity of attacks, as measured by injury presence. Injury locations were grouped (muzzle, head and ears, neck, forelegs, thorax and abdomen, fore legs, hind legs and tail). The frequency of injuries in each location was compared to establish if biases in attack location occurred. To visualise the words used to describe the handlers emotional reaction following the attack a word cloud was used; the larger the word the more times it was mentioned. Veterinary costs were recorded, or when data were missing were estimated by calculating the average reported cost. Costs for dogs withdrawn from the Guide Dogs’ programme were calculated for dogs that were still in training as the total cost to breed, puppy walk and train the dog (based on the weeks it had been in training) and the cost of a replacement dog trained to the same stage. The costs for dogs withdrawn once qualified were based on a loss of return on investment assuming a working life of 7 years.

Data were analysed using XLStat (Addinsoft, USA) and R version 3.0.2 (R core team, 2013). Count data were analysed using chi-squared tests with Yates’ correction, if required. A mixed effect model with binomial error structure was run to identify factors affecting whether an attack had resulted in physical injuries to the victim dog. Dog identification number was included as a random variable to account for multiple attacks on the same individual. Significance was detected using chi-
squared tests for the change in deviance on removing each term independently and
by the Akaike Information Criterion (AIC). Data were reported as mean ± s.e and
values were considered statistically significant when P<0.05.

Results
A total of 629 attacks occurred during the 56 month period between 01 June 2010
and 28 February 2015 (mean 11.2 attacks per month). The mean number of attacks
per month (2011 to 2014) were 8.3, 11.6, 14.3 and 11.3. Fifty attacks involved two
or more aggressors; therefore results analysis for aggressors was based on data
from 689 dogs.

Attack details
Attacks occurred in public areas on 96.8% of occasions; these were recreation
areas for 26.8% of attacks (where dogs might be expected to be free running) and
other public areas for 73.2% of attacks (where dogs might be expected to be on a
lead). Other than the victim dog’s handler and aggressor dog’s owner, there were
other people present at 74.2% of attacks. Details of witnesses were obtained after
34.5% of the attacks where there were other people present. Attacks were
described by the victim dogs’ handlers’ as being unprovoked (18.8%), caused by the
aggressor dog (22.3%) and caused by a lack of control (29.3%).

Aggressors
The aggressor dog breeds which were represented by more than 10 individual
aggressors were Staffordshire Bull Terriers or Staffordshire Bull Terrier types
(n=182, 26.4%), cross breeds (n=95, 13.9%), German Shepherd Dogs (n=39,
5.7%), Jack Russell Terriers (n=18, 2.6%), Boxers (n=16, 2.3%), Labradors (n=15, 2.2%) and Rottweilers (n=11, 1.6%). Breed was unknown for 18.6% of aggressors.

Aggressor gender was reported for 197 attacks and 123 were male (62.4%). Aggressors were reported to be with their owner but off the lead in 46.1% of attacks, with their owner and on the lead in 30.7% of attacks and not with their owner in 21.8% of attacks. Of the guide dogs that were attacked while working in harness (n=349), 36.4% were attacked by aggressors that were with their owner but not on a lead, 34.4% by aggressors on a lead and with their owner and 26.4% by aggressors that were not with their owner.

Victims

Fifty four dogs were attacked more than once during the study period; 46 dogs were attacked twice, 7 dogs were attacked three times and one dog was attacked four times. Victims were male (n=326, 51.8%) and female (n=303, 48.2%) (compared to a proportion of male dogs in the Guide Dogs’ population of 50.3%). Victims were aged between 0.2 and 13.3 years (mean age 3.66 ± 0.11 years) and were mainly black or yellow in colour (46.6% and 40.5% respectively), consistent with the two most common colours within Guide Dogs’ stock (41.1% black and 45.2% yellow). There were fewer light coloured dogs attacked and more dark coloured dogs attacked than might be expected (Table 1). Victims were qualified guide dogs (68.4%, age range 1.6 to 10.3 years), dogs in puppy walk (19.7%, age range 0.2 to 1.5 years), dogs in training (8.1%, age range 1.0 to 4.5 years), retired guide dogs (1.9%, age range 5.0 to 10.9 years), breeding stock (1.7%, age range 1.5 to 5.9 years) and buddy dogs (Guide Dogs, 2015) (0.2% aged 8.6 years).
When the attacks occurred, 55.5% of victims were working in harness, 25.8% were on a lead and 18.0% were free running. Of the qualified guide dogs that were attacked (n=430), 72.8% were working in harness when the attack occurred.

Impacts on the victim dog

Guide Dogs' stock were injured in 43.2% (n=272) of attacks; these were 153 qualified guide dogs, 83 dogs in puppy walk, 20 dogs in training, 11 retired guide dogs, 4 breeding stock and one buddy dog. The injuries received were most commonly puncture wounds (37.1%; Table 2). Veterinary attention was required for 76.5% (n=208) of the 272 dogs with injuries and a further 4.6% (n=29) of dogs visited a veterinarian for a check-up although they were found to have no physical injuries.

A mixed effect model with binomial error structure was run to establish the effect of victim breed, colour, sex, training stage, number of aggressors and aggressor breed group on whether injuries were received during an attack. Dog identification number was included as a random variable. Training stage at the time of attack significantly impacted injuries received (AIC 862.17 vs 871.24 dev = 51.289, P <0.001; Figure 1). Pairwise post hoc comparisons showed that although not different from each other (P = 0.15) retired dogs and dogs in puppy walking received injuries more frequently during attacks compared to training dogs (retired P <0.01; puppy walking P <0.01), working dogs (retired P <0.01; puppy walking P <0.01) and breeding stock (retired P
= 0.01; puppy walking $P = 0.09$). All other variables tested did not significantly impact whether injuries were received by a victim during an attack.

For dogs which spend time in harness (training and qualified guide dogs), the number of attacks resulting in injuries was significantly higher when the victim was free running prior to the attack compared to being in harness or on a lead ($n = 478$, Chi Squared = 29.68, DF = 2, $p<0.001$; Figure 2).

The locations of the injuries sustained were reported for 257 of the 272 injured dogs. The frequency of injuries to each body location varied significantly (Chi Squared = 155.74, DF = 7, $p<0.001$) with the highest frequency of injuries occurring to the head and ears (36.0%), the neck (19.9%) and to the muzzle (17.3%). There were no significant differences in the locations of injuries between the sexes (DF = 7, $P=0.145$, Chi = 10.862).

Forty-two percent of the 430 attacks on qualified guide dogs resulted in a negative impact on working ability and after 21.6% of the 430 attacks dogs were unable to work for a period of time. Twenty dogs were permanently withdrawn from the Guide Dogs’ programme as a result of dog attacks; 13 qualified guide dogs, six dogs in training and one dog in puppy walking. Thirteen of the dogs that were withdrawn had been injured in the dog attacks. Dogs were withdrawn because the dog attack
impacted their behaviour and their ability to safely guide a person that is blind or partially sighted.

Impacts on people
The dog attacks resulted in physical injuries to 87 people (13.8% of attacks), of which 59 (67.8%) were guide dog owners and 41 (47.1%) required medical attention. The victim dog handlers’ reported that their emotional wellbeing had been affected after 70.7% of attacks. Handlers’ reported that their emotional reactions to the attacks included being anxious (38.7%); shaken (34.6%) and upset (30.1%, Figure 3). Six handlers reported sleeplessness, two reported having nightmares and five reported feeling vulnerable. Two guide dog owners were considering not retraining with another dog as a result of the attacks, one wanted to move house and one did not want to work their guide dog following the attack.

3.6 Financial implications for Guide Dogs
Total veterinary costs for the 237 attacks (for 208 dogs that were injured and 29 dogs that were not) which resulted in veterinary attention were calculated to be £34,514.30. The mean veterinary costs for dogs that were injured were £160.10 (range (£9.58 to £1,219.26) and for dogs that were not injured were £41.87 (range £23.40 to £97.00). Veterinary costs were paid by the aggressor dogs’ owners in six cases and vets provided treatment free of change in five cases. The costs to Guide Dogs for the 20 dogs permanently withdrawn were based on Guide Dogs ‘The cost of a guide dog 2014’ document and were calculated to be £627,086.92.
Discussion

This study provides updated data on dog attacks on Guide Dogs’ stock. In addition, more detailed analysis of the injuries to victim dogs is reported. The number of reported attacks has increased from a mean of three per month (Brooks and others 2010) to 11.2 attacks per month. It is not clear whether this reflects higher levels of reporting or a real trend.

The current data shows consistencies with findings previously reported in that the majority of aggressors, where gender was reported, were male and the majority of attacks occurred in public areas (Sherman and others 1996; Roll and Unshelm 1997; Brooks and others 2010). In contrast, Casey and others (2012) reported no effect of dog gender on the risk on intra-specific aggression in dogs that were aggressive, however their study was based on questionnaire responses from dog owners. Roll and Unshelm (1997) reported that victim dogs were more commonly male and this was found within the first study into dog attacks on guide dogs (Brooks and others 2010), however in the present study the gender of victims was not different to the Guide Dogs’ population. The proportion of dark coloured victims was overrepresented compared with the Guide Dogs’ population. Studies directly examining the impact of coat colour on dog communication are rare and so the reasons for higher numbers of dark coloured attack victims remain unclear. Within the dataset there were reports for 54 dogs which had been the victims of dog attacks on more than one occasion. Information for risk factors, such as victim dog handler and dog behaviour would be useful for further investigation of these dogs. However this was not available for this study.
Most of the victims were qualified guide dogs, with almost three quarters working in harness when the attacks occurred. Overall, including dogs in training, 55% of the total number of victims were working in harness when attacked. The guide dog harness is designed to be visible and should have been apparent to the owners of aggressors who were present in 76.8% of attacks. It is feasible that a proportion of these attacks could have been avoided if the aggressor was put on a lead when the owner saw the guide dog in harness. Injuries were less common when guide dogs were in harness potentially because of greater intervention from the guide dog owners or trainers. Victims were injured in 42% of attacks and injuries were more frequently located towards the front of the body. The costs of veterinary treatment and replacement dogs were estimated to be over £650,000.00 but the impacts of the attacks on the guide dog owner are more important (Marquès-Brocksopp 2015). More than 70% of the victim dogs’ handlers reported effects on their emotional wellbeing, whilst a small number of guide dog owners did not want to work their dogs or train with a new dog, and, in some cases, experienced sleeplessness and nightmares. As well as a long-term holistic support mechanism in the period following an attack (Marquès-Brocksopp, 2015), guide dog owners that have to visit a veterinarian with their guide dog can be further supported by the veterinary practice by ensuring that their needs are understood and met during their visit (England and others 2014).

Many authors have reported the benefits of pet dog, assistance dog and guide dog ownership (Friedmann 1995; Lane and others 1998; Refson and others 1999; Whitmarsh 2005; Guest and others 2006; McConnell and others 2011; Ramírez and others 2014). Guide dogs have been found not only to provide the benefit of
enhanced physical wellbeing mobility and independence to their guide dog owner, but also social, spiritual and emotional benefits. These include increased confidence, companionship, purpose in life and improved social connectedness (Refson and others 1999; Whitmarsh 2005). It is not surprising that Nicholson and others (1995) reported that when guide dogs are withdrawn guide dog owners experience high levels of stress, feelings which can be similar to the loss of a relative or friend, or the death of a pet. Within the current study, 20 dogs were withdrawn from the Guide Dogs programme as a direct result of a dog attack, 20% of qualified guide dogs required time off from working and 13 dogs were withdrawn from working as a guide. The implications for the guide dog owners of these dogs are likely to be long-term and complex affecting not only their mobility and physical health, but also their social and emotional wellbeing.

**Acknowledgements**

The authors would like to thank guide dog owners, volunteers and staff for their assistance with dog attack reporting.

**References**


Table 1. The breeds, colours and work stages for dogs that were attacked (n=629) and dogs that were in the Guide Dogs’ population (n=8,750) correct as of 08 April 2015.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Number and percentage of dogs in population (%)</th>
<th>Number and percentage of dogs that were attacked (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Breed</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Border collie</td>
<td>3 (0.0%)</td>
<td>2 (0.3%)</td>
</tr>
<tr>
<td>Border collie x golden retriever</td>
<td>27 (0.3%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Curly coated retriever x golden retriever</td>
<td>11 (0.1%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Flat coated retriever x golden retriever</td>
<td>23 (0.3%)</td>
<td>3 (0.5%)</td>
</tr>
<tr>
<td>German shepherd dog</td>
<td>303 (3.5%)</td>
<td>22 (3.5%)</td>
</tr>
<tr>
<td>Golden retriever</td>
<td>698 (8.0%)</td>
<td>41 (6.5%)</td>
</tr>
<tr>
<td>Golden retriever x flat coated retriever</td>
<td>150 (1.7%)</td>
<td>11 (1.7%)</td>
</tr>
<tr>
<td>Golden retriever x German shepherd dog</td>
<td>253 (2.9%)</td>
<td>18 (2.9%)</td>
</tr>
<tr>
<td>Golden retriever x Labrador</td>
<td>2982 (34.1%)</td>
<td>196 (31.2%)</td>
</tr>
<tr>
<td>Golden retriever x Labrador*</td>
<td>11 (0.1%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Irish water spaniel x Labrador</td>
<td>6 (0.1%)</td>
<td>2 (0.3%)</td>
</tr>
<tr>
<td>Labrador</td>
<td>2292 (26.2%)</td>
<td>184 (29.3%)</td>
</tr>
<tr>
<td>Labrador x curly coated retriever</td>
<td>13 (0.1%)</td>
<td>5 (0.8%)</td>
</tr>
<tr>
<td>Labrador x golden retriever</td>
<td>724 (8.3%)</td>
<td>47 (7.5%)</td>
</tr>
<tr>
<td>Labrador x golden retriever*</td>
<td>867 (9.9%)</td>
<td>69 (11.0%)</td>
</tr>
<tr>
<td>Labrador x Labrador*</td>
<td>144 (1.6%)</td>
<td>19 (3.0%)</td>
</tr>
<tr>
<td>Standard poodle x Labrador</td>
<td>100 (1.1%)</td>
<td>4 (0.6%)</td>
</tr>
<tr>
<td><strong>Colour</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dark</td>
<td>3649 (41.7%)</td>
<td>298 (47.4%)</td>
</tr>
<tr>
<td>Light</td>
<td>4665 (53.3%)</td>
<td>299 (47.5%)</td>
</tr>
<tr>
<td>Mixed</td>
<td>387 (4.4%)</td>
<td>28 (4.5%)</td>
</tr>
<tr>
<td>Other</td>
<td>49 (0.56%)</td>
<td>4 (0.6%)</td>
</tr>
<tr>
<td><strong>Stage</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Buddy dog</td>
<td>112 (1.3%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Puppy walking</td>
<td>1509 (17.2%)</td>
<td>124 (19.7%)</td>
</tr>
<tr>
<td>Qualified</td>
<td>4956 (56.6%)</td>
<td>430 (68.4%)</td>
</tr>
<tr>
<td>Retired</td>
<td>708 (8.1%)</td>
<td>12 (1.9%)</td>
</tr>
<tr>
<td>Breeding stock</td>
<td>374 (4.3%)</td>
<td>11 (1.7%)</td>
</tr>
<tr>
<td>In training</td>
<td>588 (6.7%)</td>
<td>51 (8.1%)</td>
</tr>
</tbody>
</table>
Table 2. The types of injuries reported for the 272 victim dogs that were injured as a result of dog attacks

<table>
<thead>
<tr>
<th>Description of injury</th>
<th>Frequency</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bite</td>
<td>40</td>
<td>14.7</td>
</tr>
<tr>
<td>Bruising or soreness</td>
<td>38</td>
<td>14.0</td>
</tr>
<tr>
<td>Crush injury</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Cut, tear, laceration, open wound</td>
<td>55</td>
<td>20.2</td>
</tr>
<tr>
<td>Graze or abrasion</td>
<td>38</td>
<td>14.0</td>
</tr>
<tr>
<td>Not stated</td>
<td>36</td>
<td>13.2</td>
</tr>
<tr>
<td>Perforated ear drum</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Puncture</td>
<td>101</td>
<td>37.1</td>
</tr>
</tbody>
</table>

Figure 1. Number of attacks at each training stage resulting in injuries

Figure 2. Frequency of attacks resulting in injury on training and working dogs while working in harness, free running and on a lead.

Figure 3. The word cloud shows the most common words used by victims’ handlers to describe how they were affected emotionally following a dog attack. The larger the word the more frequently it was mentioned.