

Estimating the Cost of Road Traffic Accidents Caused by Deer in England

There are no systematic records of deer-related Road Traffic Accidents (RTAs) in the United Kingdom and the estimates that do exist are based on extrapolations from European or other studies, from estimated UK deer populations, or from limited records of accidents or insurance claims.

Estimates can therefore only be given as rather wide ranges or as very approximate figures. Thus the annual number of deer RTAs probably lies within the range 20,000 – 60,000 for the UK as a whole, or 12,500 – 54,000 for England. The costs of damage caused as a result of these accidents may amount to around £10.5 million per annum in England alone. No attempt has been made to calculate additional costs such as lost work time, or to offset revenue generated, for example to the motor repair industry.

The number of human fatalities caused each year is likely to be in the range 12 – 36 for the UK (7 – 32 in England) and injuries in the range 1200 – 3600 (750 – 3200 in England). Records from the early 1990s suggest that the actual number of fatalities is typically around 14 – 15 per annum in the UK as a whole.

1 Introduction

- 1.1 There are no national statistics maintained on deer-related, or other wildlife-related, road traffic accidents (RTAs) in the UK. In February 2003 the Deer Initiative launched an investigation into deer RTAs in England and Wales (<http://www.deercollisions.co.uk/>), which is being co-ordinated by Jochen Langbein. However, the project is due to run until December 2004 and, as yet, there are no results available. The best currently available information on deer RTAs in the UK is from a report by SGS UK Ltd., Environment Division, on behalf of the Highways Agency (SGS, 1998), and from a report on RTAs in Scotland (Staines, Langbein & Putman, 2001). This note uses data from these reports, plus some other data from Europe, to estimate the likely costs of deer RTAs in England.

2 Number of Road Traffic Accidents

- 2.1 SGS (1998) estimated the likely number of deer RTAs per year from the proportion of the deer population likely to be involved, based on information from European studies, and the estimated size of deer populations in the UK. On the basis of European road-kill data (Groot Bruinderink & Hazebroek, 1996) they suggested that roe deer would account for most RTAs and that the number killed would approximate to 1.6% to 6% of the spring population. They calculated this as 8,000 to 30,000 per annum, assuming a UK roe deer population of 500,000. Using a “conservative” estimate of 1.5% for RTAs amongst their “estimated 750,000 head of other deer

species found in the UK” they calculated that this would add an additional 12,000 accidents, giving a total of 20,000 to 42,000 deer RTAs per annum. They also extrapolated from actual reports of RTAs from a number of Police forces, Local Authorities etc, and estimated that there may be about 4000 *reported* (i.e. presumably more serious) deer RTAs in the UK each year. They suggested that this could indicate a total of between 30,000 and 50,000 deer RTAs per annum and it has been suggested elsewhere that the higher figure from the population based estimate (42,000) may underestimate the scale of the problem (Staines *et al*, 2001; Putman, 2003).

- 2.2 However, Staines *et al* (2001) found that only 12% of insurance claims recorded (by the only insurance company to respond to their survey) were for Scotland. SGS (1998) also estimated that fewer than 9% of ‘reported’ RTAs came from Scotland yet the larger proportion of the UK red and roe deer populations are found there. This is presumably because of lower road and traffic density in Scotland and suggests that Scotland is likely to be closer to Norway in terms of proportion of spring deer populations involved in RTAs, than to the rest of Europe. Thus, to apply a single percentage factor to the UK deer population as a whole seems inappropriate. A better estimate for Scotland might be based on 1.6% (as in Norway) of the spring roe population. Conversely, the estimate for England should probably be based on the figures for more densely populated parts of Europe; i.e. 5 - 6%. This approach, using population figures summarised in Wilson (2003), suggests an annual total of about 5,600 accidents involving roe and about 5,500 involving other species of deer in Scotland (using SGS’s 1.5% figure for ‘other’ deer), and 10,000 – 12,000 involving roe in England and about 2,500 involving other species. This gives a UK total of 23,600 – 25,600. However, these figures relate only to animals killed and Staines *et al* (2001) suggested that the actual number of accidents (including those where deer were not killed) would be significantly higher (than SGS’s 20,000 – 42,000).
- 2.3 SGS obtained data from their survey on the proportion of animals killed outright, put down at the scene of the accident, or running away. They found that 93% of fallow deer involved in RTAs and 88% of roe deer were either killed outright or put down. Only 2% of fallow and 5% of roe either ran off after impact or managed to avoid the collision. Staines *et al* (2001) reported up to 38% of deer ‘not hit’, but from the detailed records they obtained 78% were either reported as killed or put down, 8.5% injured (but not specified if put down) and the remainder ran off, not hit, or not found. Taking a compromise between the extremes of these figures, an estimate of 20% of deer involved in RTAs escaping without being killed may be reasonable (Table 1).

3 Costs of damage

- 3.1 Hartwig (1991) cited by Staines *et al* (2001) reported that 97.5% of RTAs involving roe deer and 88% involving red deer caused only ‘minor’ damage (less than about £1000). Staines *et al* (2001) found that 276 (29%) of their 954 records indicated some damage caused. However, because of the sources of their data they considered it likely that they would have had a disproportionate sample of more serious cases. They estimated a total number of insurance claims of 6,250 per annum, nationwide, suggesting about 5,500 in England. At an average cost of £1,200 per claim (Staines *et al*, 2001) this gives a cost of £6.6 million per annum to the motor insurance industry in England. Assuming an insurance excess of £100 per claim this adds a further £0.55 million costs to vehicle owners. Assuming that at least the same number of accidents result in minor damage, for which no claim is made, and that they cost, on average, half this amount (£600), this would

add a cost of £3.3 million per annum to vehicle owners. **This gives a total estimated cost of deer damage as a result of RTAs in England of approximately £10.5 million per year.**

- 3.2 The overall costs of such damage to the economy are difficult to calculate since much of this will result in business for car repair workshops etc, thus helping to provide employment, whilst there may be work time lost by those involved in the accidents whilst trying to arrange repairs and settle claims. There do not appear to have been any previous attempts to calculate these costs.

Table 1

Estimates of the annual number of deer-related RTAs in mainland UK based on SGS (1998) report and showing figures calculated separately for England and Scotland and adjusted for deer not killed (assumed 20% of those involved).

Source	UK	England*	Scotland*
SGS (1998)	20,000 – 42,000	18,000 – 37,800	2,000 – 4,200
SGS + non-kills	24,000 – 50,400	21,600 – 45,360	2,400 – 5,040
SGS based on reported accidents	30,000 – 50,000	27,000 – 45,000	3,000 – 5,000
As above + non-kills	36,000 – 60,000	32,400 – 54,000	3,600 – 6,000
England & Scotland calculated separately	23,600 – 25,600	12,500 – 14,500	~11,100
As above + non-kills	28,320 – 30,720	15,000 – 17,400	~13,320
TOTAL RANGE	20,000 – 60,000	12,500 – 54,000	2,000– 13,320

*assumed 90% England and 10% Scotland if not split by source

4 Personal injury and fatalities

- 4.1 Groot Bruinderink & Hazebroek (1996) estimated the proportion of ungulate (mainly deer) RTAs in Europe that resulted in human injuries to be about 6%, and fatalities about 0.06%. Other sources cited by SGS (1998) and Staines *et al* (2001) were broadly in agreement with these levels. Based on the estimated number of RTAs given above (Table 1) this suggests 12 – 36 deaths and 1200 – 3600 injuries in the UK as a whole each year, and **7.5 – 32.4 deaths and 750 – 3240 injuries in England** alone. Data obtained by SGS (1998) and Staines *et al* (2001) from their surveys suggested higher incidence of injuries (12 -16%) but these were likely to have been biased by the greater likelihood of serious accidents having been recorded and reported. Groot Bruinderink & Hazebroek (1996) reported fatalities in the UK for the years 1990 – 1992 of 14, 9 and 18 respectively (mean = 13.7). This is at the lower end of the estimated UK range suggesting that the estimates of deaths and injuries are reasonable, and, incidentally, supporting the estimates of overall RTA numbers (It may be noted that when total RTAs are calculated separately for English and Scottish deer populations - see Table 1 - the estimated number of fatalities per year is about 14 - 15).

5 Conclusions

- 5.1 There are no systematic records of deer-related RTAs in the UK, or injuries, deaths or damage caused by these. Estimates of the number of RTAs that occur are highly speculative and give wide ranges for possible RTA numbers based on data from Europe and elsewhere. One of the most frequently cited estimates (20,000 – 42,000: SGS, 1998) is calculated from *pooled* UK deer population figures and does not allow for the likely relatively low incidence of accidents in Scotland and high incidence in England as a result of differing road and traffic densities. Nor does this figure allow for a proportion of deer involved in accidents that are not killed. The annual number of deer RTAs in England probably lies within the range 12,500 – 54,000. It is not possible to be more precise than this. Estimates of the costs of insurance claims resulting from accidents involving deer suggest an annual cost in England of some £6.6 million for insurance companies, plus perhaps more than £0.5 million paid out by vehicle owners as 'excess' payments. When non-insurance repairs are included this may make a total cost of around £10.5 million per annum. This compares with a recent estimate of the cost of deer related RTAs in the East of England alone of over £4 million (White *et al.*, undated). Additional costs, such as lost work time, have not been calculated in the present estimate, nor has any attempt been made to take account of the balancing revenue earned by, for example, the motor repair industry.
- 5.2 Deer related RTAs are also likely to result in between 7 and 32 deaths and 750 to 3,200 human injuries in England each year. Data from the early 1990s suggests that the number of deaths may typically be around 14 – 15 per year for the UK as a whole.

References

- Groot Bruinderink, G. W. T. A. & Hazebroek, E. (1996) Ungulate traffic collisions in Europe. *Conservation Biology*, **10**, 1059-1067.
- Putman, R. (2003) *The Deer Manager's Companion*. Swan Hill, Shrewsbury.
- SGS (1998) *The Prevention of Wildlife Casualties on Roads through the use of Deterrents; Prevention of casualties amongst Deer Populations*. Report by SGS United Kingdom Ltd, Environment Division, to the Highways Agency.
- Staines, B., Langbein, J. & Putman, R. (2001) *Road Traffic Accidents and Deer in Scotland*. Report to the Deer Commission for Scotland.
- White, P. C. L., Smart, J. C. R., Böhm, M., Langbein, J. & Ward, A. I. (undated) *Economic Impacts of Wild Deer in the East of England*. Report to the Forestry Commission.
- Wilson, C. J. (2003) *Current and Future Deer Management Options*. Report on behalf of Defra European Wildlife Division.