Written evidence submitted by Dr. Sarah Perkins, Amy Schwartz, Dr. Eleanor Kean, Dr. Liz Chadwick; wildlife biologists, Cardiff University (RSA0145).

We write to submit evidence to the Transport Committee of the House of Commons with respect to animal involvement in collisions, and the implications for road safety.

Executive summary

1. We have gathered data since 2013, to current date, on collisions between wildlife and vehicles, using reported evidence of wildlife ‘roadkill’ across the UK.
2. Data have been collated across the UK from local authorities, local interest groups (e.g. Badger Trust), and ‘citizen scientists’; members of the public reporting wildlife roadkill to us.
3. Through collecting these data, we have amassed a long-term dataset on wildlife roadkill, which we have used to identify ‘hotspots’; where and when wildlife roadkill occurs.
4. Since 2013, we have received over 57,000 individual records of wildlife roadkill across the UK.
5. Wildlife roadkill is spatially aggregated in the south and south-east UK, and temporally stable.
6. Over the 12 years since ‘STATS19’ police data started recording animals involved in road accidents (hereafter, termed animal-vehicle collisions) 8,300 animal-vehicle collisions have occurred, with an associated 11,223 casualties.
7. Animals-vehicle collisions constitute 0.5% of all casualties.
8. Of the identified carriageway hazard types (other vehicle, inanimate object, etc.) resulting in human casualties, 50% are identified as caused by animals.
9. Animal-vehicle collisions are spatially aggregated in south and south-east UK, and temporally stable.
10. Animal and/or driver behaviour could be altered to reduce collision numbers in areas identified to be high risk. Effective mitigation (signage, ‘green bridges’) at identified locations would alter driver and animal behaviour respectively.

Relevance

11. Worldwide, collisions of vehicles with animals causes millions of wildlife deaths per year (Seiler & Helldin, 2006)
12. Such collisions with animals are an obvious and serious risk to humans – deer collisions alone in the UK account for over 400-700 personal injuries per year, including around 20 fatalities (The Deer Initiative, 2016).

Animal-vehicle collisions

13. Using open source data from the Dept. of Transport (the STATS19 police database) we collated data on human casualties (from minor injury to fatalities) where an animal hazard (animal-vehicle collisions) was identified, and assessed the associated risk of human injury by calculating the proportion of animal-vehicle collisions with respect to the STATS19 associated metadata (speed limits, road type etc).
14. Since 2005 the STATS19 police database has recorded the number of animal-vehicle collisions that result in human casualties. On average, over the years (2005-2017), 50% of all carriageway hazard collisions involved an animal, which translates as 935 human casualties per annum, on average.
15. Over 12 years of police data collection (2005-2017) there has been a slight decrease in the relative proportion of human casualties from animal-vehicle collisions, mostly in the last 5 years (Figure 1).
16. Wildlife roadkill is temporally stable, that is, the relative number is approximately the same between years (with 2017 being a slightly anomalous year) and within year there is slightly more wildlife roadkill in the summer relative to the winter (Figure 2).

17. Spatially, casualties caused by all carriageway hazards and animal-vehicle collisions are coincidental with wildlife roadkill records (Figure 3). The co-occurrence of these distributions requires a detailed study to assess any significance but could be indicative of animals being involved in an injury where the carriageway hazard is reported as ‘unknown’.

18. We propose, therefore, that there is likely to be significant under-reporting of animals as a carriageway hazard, i.e. a substantial number of false negatives in the police STATS19 database. Note - animals are only recorded if present but could still have been the cause of the collision if not present, i.e., they could have run or flown away.
Figure 3. Heat maps showing a) spatial distribution of road traffic collisions resulting in injury with carriageway hazards (vehicle on road, other object, previous accident, pedestrian in carriageway), b) spatial distribution of road traffic collisions resulting in injury where the carriageway hazard is an animal, and c) wildlife roadkill reported to Cardiff University (Figure credit – Rhodri Phillips)

Risk factors for animal-vehicle collisions resulting in casualties (from police STATS19 data)

19. Most (44%) of animal-vehicle collisions resulting in casualties occur on ‘A’ roads
20. Most animal-vehicle collisions occur on roads with 60mph speed limits - 50% - compared to all other collisions involving carriageway hazards on 60mph roads, which is 17%.
21. Proportionally, most animal-vehicle collisions occur at night (53%). This figure is in contrast to all other collisions with carriageway hazards, where most (67%) occur during the day.
22. Road surface conditions do not affect the likelihood of animal-vehicle collisions.
23. From 7pm until 7am, collisions with carriageway hazards are proportionally more likely to be with animals than with any other object; a reflection of nocturnal behaviour of mammals that are involved in collisions.

Summary and recommendations

24. Collisions involving an ‘animal hazard’ that result in human injury occur more than average between 7pm and 7am, on an ‘A’ road and within a 60mph speed limit.
25. Recommendations include increasing the resolution of reporting of animal-vehicle collision data in the STATS19 database, by including the type of animal involved in collision (i.e. livestock, pet, deer, badger, pheasant), as successful mitigation (signage, overpass, underpass etc.) and other solutions to reduce collisions will vary depending on the animal involved.
26. Mitigation could be implemented to alter wildlife and/or driver behaviour. A road safety awareness campaign, for example, communicating risk factors, including driving at night on 60 mph limit ‘A’ roads.
27. Mitigation could include variable (reduced) speed limits at night at identified wildlife roadkill hotspots (although specific locations would need to be determined from a detailed analysis).
28. We suggest that wildlife-vehicle collisions are under-recorded. As such, an in-depth analysis of wildlife roadkill data is needed to identify high collision locations where wildlife cross roads. This analysis would allow locations to be identified for mitigation in order to reduce the probability of wildlife causing a collision.
29. Going forward, the creation of a central database of wildlife mitigation structures across the road network, is crucial to allow assessment of their effectiveness. These locations are currently not reported, monitored or maintained in a coordinated fashion, despite significant investment in their creation.

June 2019
References

