

## Accepted Manuscript

Title: Mapping Risk: Quantifying and Predicting the Risk of Deer-Vehicle Collisions on major roads in England

Authors: Luca Nelli, Jochen Langbein, Peter Watson, Rory Putman



PII: S1616-5047(17)30394-4  
DOI: <https://doi.org/10.1016/j.mambio.2018.03.013>  
Reference: MAMBIO 40998

To appear in:

Received date: 4-12-2017  
Accepted date: 24-3-2018

Please cite this article as: Nelli L, Langbein J, Watson P, Putman R, Mapping Risk: Quantifying and Predicting the Risk of Deer-Vehicle Collisions on major roads in England, *Mammalian Biology* (2018), <https://doi.org/10.1016/j.mambio.2018.03.013>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

## Mapping Risk: Quantifying and Predicting the Risk of Deer-Vehicle Collisions on major roads in England.

Luca Nelli<sup>1,2\*</sup>, Jochen Langbein<sup>3</sup>, Peter Watson<sup>2</sup>, , Rory Putman<sup>1</sup>

<sup>1</sup> University of Glasgow, Institute of Biodiversity, Animal Health and Comparative Medicine, Graham Kerr Building, Glasgow G12 8QQ, UK.

<sup>2</sup> The Deer Initiative, The Carriage House, Brynkinalt Business Centre, Chirk, Wrexham LL14 5NS, UK.

<sup>3</sup> Langbein Wildlife Associates, Greenleas, Chapel Cleeve, Somerset TA24 6HY, UK.

\*corresponding author: luca.nelli@glasgow.ac.uk.

### Abstract

Wildlife-vehicle collisions are increasing across both Europe and North America, with considerable implications for animal populations themselves, for human safety and in terms of economic cost. Deer are generally the primary species involved in wildlife-vehicle collisions. Common mitigation measures, such as warning signs, chemical repellent, wildlife underpasses and overpasses and roadside fencing, have however proven to have a limited efficacy. The development of tools aimed at predicting the real-time risk of hitting deer on a particular stretch of road can improve both human and wildlife safety, particularly if such tools can be adopted on a large scale. We analysed data on deer-vehicle collisions (DVCs) occurring on the major roads in England between 2008-2014, collected on behalf of Highways England agency. Using zero-inflated regression models, we analysed the relationships between DVCs and data on environmental, bioclimatic and traffic-related factors, on different spatial scales and for different seasons. Traffic flow, average precipitation, and a combination of suburban areas and broadleaved forest were generally associated with increased frequency of DVCs. We used the results of these models to draw seasonal risk maps, which could potentially be used to target appropriate mitigation or measures aimed at increasing driver awareness.

**Key words:** Deer-Vehicle Collisions, Risk maps, Road management, Wildlife management, Urban wildlife.

Download English Version:

<https://daneshyari.com/en/article/8475589>

Download Persian Version:

<https://daneshyari.com/article/8475589>

[Daneshyari.com](https://daneshyari.com)