

Negative effects of road traffic on vertebrate species – A literature review from Hungary

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Introduction

Transportation is one of the most important pillars of economy and is a central part of our everyday life society. In the last decades, the road network and the number of vehicles increased considerably all around the world. These effects put a serious pressure on the wildlife and the human-wildlife conflicts including animal-vehicle collisions are major problems nowadays.

After legal harvesting, the second largest cause of human-induced mortality in vertebrates is the animal-vehicle collision. The amount of roadkilled birds are 194 million individuals per year, while this number in mammals are 29 millions. Country-level estimates of roadkilled animals are available in the international literature from several parts of the world, but not from Hungary. As a result, Hungary often indicated as a blank space in review papers, however, regional publications from 1978 to nowadays are available.



Figure 1. A strictly protected Eurasian otter hit by car.

Material and method

In this literature review we collected the related publications from Hungary, in order to identify the negative effects of road traffic on the vertebrates and make it available for the international readership. We summarized the data from these papers and made a roadkill checklist with the estimated conservation damage.

Results

Due to the detailed literature review we found 37 articles related to animal-vehicle collision, in which 153 roadkilled vertebrate species were listed by the authors. From these there were 111 protected and 19 strictly protected species. The nature conservation damage caused by the roadkills exceeded one billion Hungarian forints (more than 3 millions euro) in the case of the vertebrates.

According to the related articles road traffic influenced the populations of Amphibians the most, as the biggest number of roadkilled individuals were belonged into this taxa, as well as 66% of the local species pool were affected.

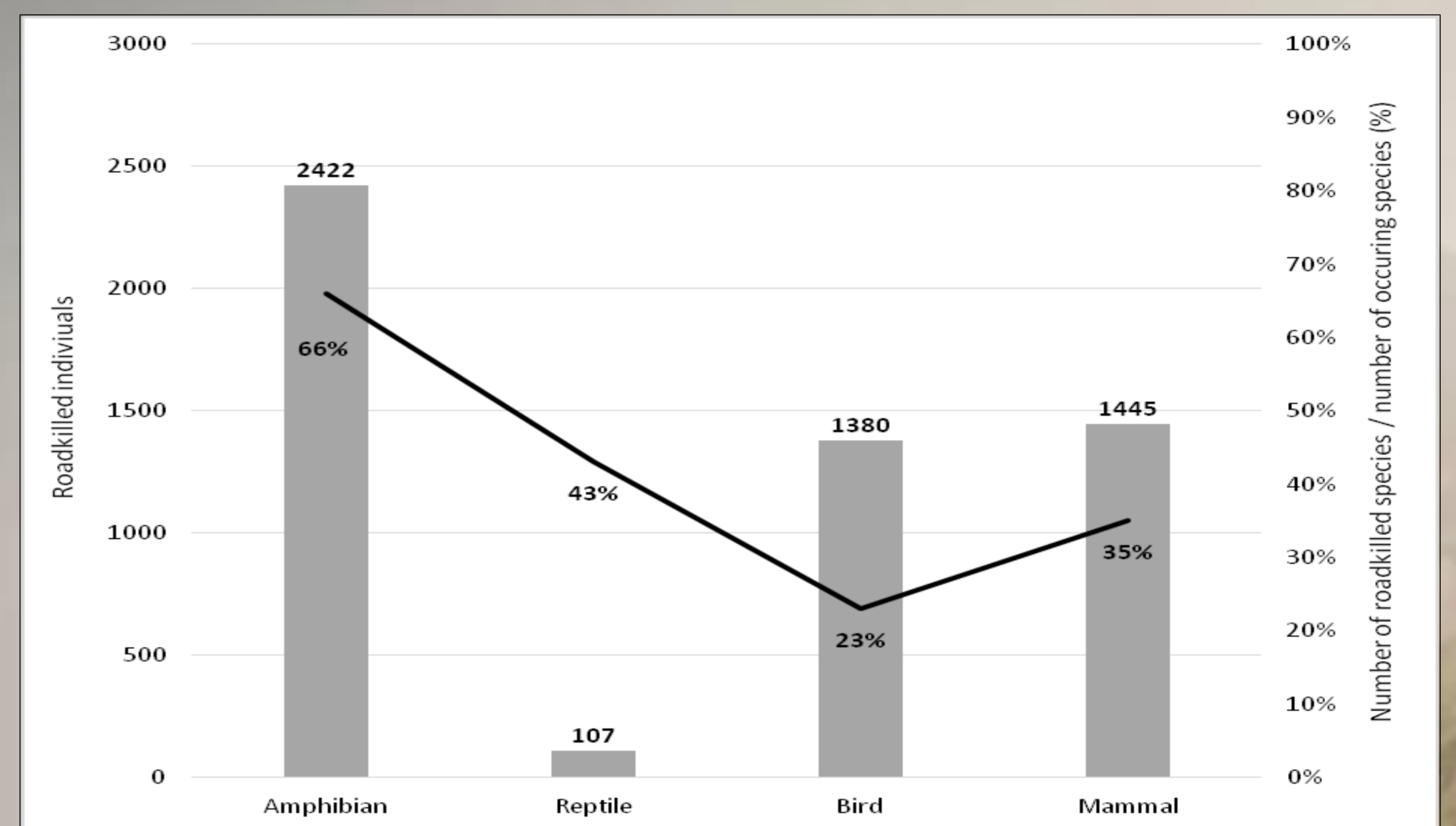


Figure 2. The roadkilled vertebrates grouped by class, as well as the rate of the roadkilled species in relation to vertebrate fauna of Hungary.

English name	Scientific name	Number of roadkilled individual
House Sparrow	<i>Passer domesticus</i>	535
Tree Sparrow	<i>Passer montanus</i>	393
Red-backed Shrike	<i>Lanius collurio</i>	277
Barn Swallow	<i>Hirundo rustica</i>	245
Brambling	<i>Fringilla montifringilla</i>	237
House Martin	<i>Delichon urbicum</i>	216
European Goldfinch	<i>Carduelis carduelis</i>	167
Little Owl	<i>Athene noctua</i>	101
Blackbird	<i>Turdus merula</i>	69
Barn Owl	<i>Tyto alba</i>	66

Table 1. The top ten most frequently roadkilled bird species in Hungary

English name	Scientific name	Number of roadkilled individuals
Northern White-breasted Hedgehog	<i>Erinaceus roumanicus</i>	958
European Hamster	<i>Cricetus cricetus</i>	584
Common Vole	<i>Microtus arvalis</i>	395
Eurasian Otter	<i>Lutra lutra</i>	177
Field Mouse species	<i>Apodemus sp.</i>	136
Brown Rat	<i>Rattus norvegicus</i>	70
Steppe Polecat	<i>Mustela eversmanii</i>	44
House / Steppe Mouse	<i>Mus spp.</i>	34
European Mole	<i>Talpa europaea</i>	19
Least Weasel	<i>Mustela nivalis</i>	16

Table 2. The top ten most frequently roadkilled mammal species in Hungary

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