

Study reveals impact of roadkill worse than thought—some mammal populations could reach 'tipping point'

March 21 2023



Credit: AI-generated image ([disclaimer](#))

With millions of animals killed on roads every year wildlife conservation experts at Nottingham Trent University wanted to better understand how mammal populations were being affected.

The research team analyzed data from previous studies exploring mammal deaths across 69 species and 150 populations of animals worldwide over a number of years.

They found that, as well as those from plentiful wild populations, vehicles were also responsible for the deaths of animals classed as threatened, vulnerable and endangered.

In addition to smaller mammals such as hedgehogs, squirrels and otters, animals including macaque monkeys, [black bears](#), wolves, puma, elk, warthogs, wombats, bison, lynx, anteaters and even a sea lion and a hippo were killed by vehicles.

Roadkill was found to be the most common cause of [death](#) in almost a third (28%) of all populations studied—ahead of causes such as disease, hunting and predation by other animals.

A further 30% and 32% of all populations, respectively, experienced road deaths as their second and third largest cause of death.

Across some populations of animals up to 80% of all known mortality was as a result of collisions with vehicles, the study showed.

While raw counts of animals killed have been published previously, the researchers argue that these alone provide little information about the impact of [roadkill](#) on specific populations.

They say that in some cases a high roadkill rate did not negatively impact populations—particularly for species with fast breeding rates or living in protected areas—whereas in others even a low level of road mortality at the current levels could lead to a potential tipping point in numbers.

Species most likely to be killed on roads included common genet,

Tasmanian devils, Virginia opossums, western quolls, common wallaroos, gray wolves, gray foxes, San Clemente island foxes, American black bears, African wild dogs, pumas and fox squirrels.

The study showed that more than half (58%) of all fox squirrel deaths in the populations studied were attributed to vehicles, along with almost half (46%) of Virginia opossum deaths.

Species where roadkill was considered to be at a concerning level for local [population](#) persistence included the "endangered" Iberian lynx, Tasmanian devils and African wild dogs, the "near-threatened" San Clemente island fox and the "vulnerable" giant anteater.

For the Iberian lynx in Spain, 59% and 80% of total deaths in two populations were due to vehicle collisions, while 38% and 48% of African wild dog and San Clemente island fox populations—both with declining populations—were killed on roads.

Of 50 Tasmanian devils released into the wild from captive breeding programs, 38% were killed on roads and the growth rate of giant anteater populations were halved due to vehicle collisions.

The research suggests that at current roadkill rates some giant anteater populations are likely to go extinct in approximately ten years.

Across many species the researchers also found females dying on roads was more common than previously believed, something they argue is concerning as the death of breeding-age females can have a more damaging impact on a population's survival than that of males.

The loss of females can also lead to the death of dependent juveniles through starvation or "infanticide," the intentional killing of offspring by a male.

The study also showed that adults were significantly affected by roadkill, which is likely a consequence of the greater roaming behavior of adults to find mates and food.

This is also worrying, the researchers say, as changes in adult survival can have the greatest impact on populations, particularly for species where adult lifespans are long.

The deaths of apex predators such as fox species, pumas, wolves, wild dogs, bobcats and coyotes could also be having an indirect impact on other populations due to their ecological importance.

Importantly, the researchers say the full impact of roadkill may be even greater, as there could be other species facing substantial risk to their populations but which have not been previously studied.

"The extent of roadkill is far more shocking than we'd previously imagined and it is clear that it is implicated in a possible tipping point for some wild populations," said lead researcher Lauren Moore of Nottingham Trent University's School of Animal, Rural and Environmental Sciences.

She said, "While sometimes the raw numbers of animals killed may appear relatively low, roadkill can directly and indirectly contribute to mortality rates outnumbering reproduction rates, making populations vulnerable. The effect of roads on wild animal populations are one of the most pressing contemporary conservation issues and with road networks increasing globally we need to urgently address this.

"Quantifying the impact of roadkill in this way is important in order to help influence road planning management and decisions, along with future mitigation work."

Dr. Silviu Petrovan, study co-author and senior researcher at the University of Cambridge, said, "We all see roadkill when driving but, as this study shows, this mortality can have very different impacts for different species. This is a widespread and globally accelerating problem but to best focus on solutions we need to better understand which populations and which [species](#) are most at risk and target those."

Nida Al-Fulaij, Conservation Research Manager at wildlife charity People's Trust for Endangered Species (PTES)—which part-funded the study—said, "This study highlights the major threat roadkill poses to wildlife populations and the urgent need to find safe solutions. PTES funding supported the research into the impact of [road](#) deaths on giant anteater populations in the Cerrado, Brazil.

"Further PTES funds are now supporting research into mitigation measures, such as the design of critical wildlife bridges for golden langurs in India, slow lorises in Java and hazel dormice here in the UK."

The study, which also involved the University of Reading and Cardiff University, is published in the journal *Biological Reviews*.

More information: Lauren J. Moore et al, Demographic effects of road mortality on mammalian populations: a systematic review, *Biological Reviews* (2023). [DOI: 10.1111/brv.12942](https://doi.org/10.1111/brv.12942)

Provided by Nottingham Trent University

Citation: Study reveals impact of roadkill worse than thought—some mammal populations could reach 'tipping point' (2023, March 21) retrieved 30 April 2024 from <https://phys.org/news/2023-03-reveals-impact-roadkill-worse-thoughtsome.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.