



Proyecto RISKY: Wildlife Mortality from Energy and Transport Infrastructure

Francisco Pando
GBIF España - CSIC



**Jornadas sobre
Información de
Biodiversidad y
Administraciones
Ambientales**

**19 al 21 de noviembre
de 2025, Acuario de
Zaragoza, Zaragoza**





RISKY



Wildlife Mortality from Energy and Transport Infrastructure

Francisco Pando
Filipa Coutinho Soares
Tomé Neves
Akanksha Saxena
Manisha Bhardwaj
Joana Bernardino
Ana Teresa Marques
Clara Grilo

Wildlife-vehicle collisions

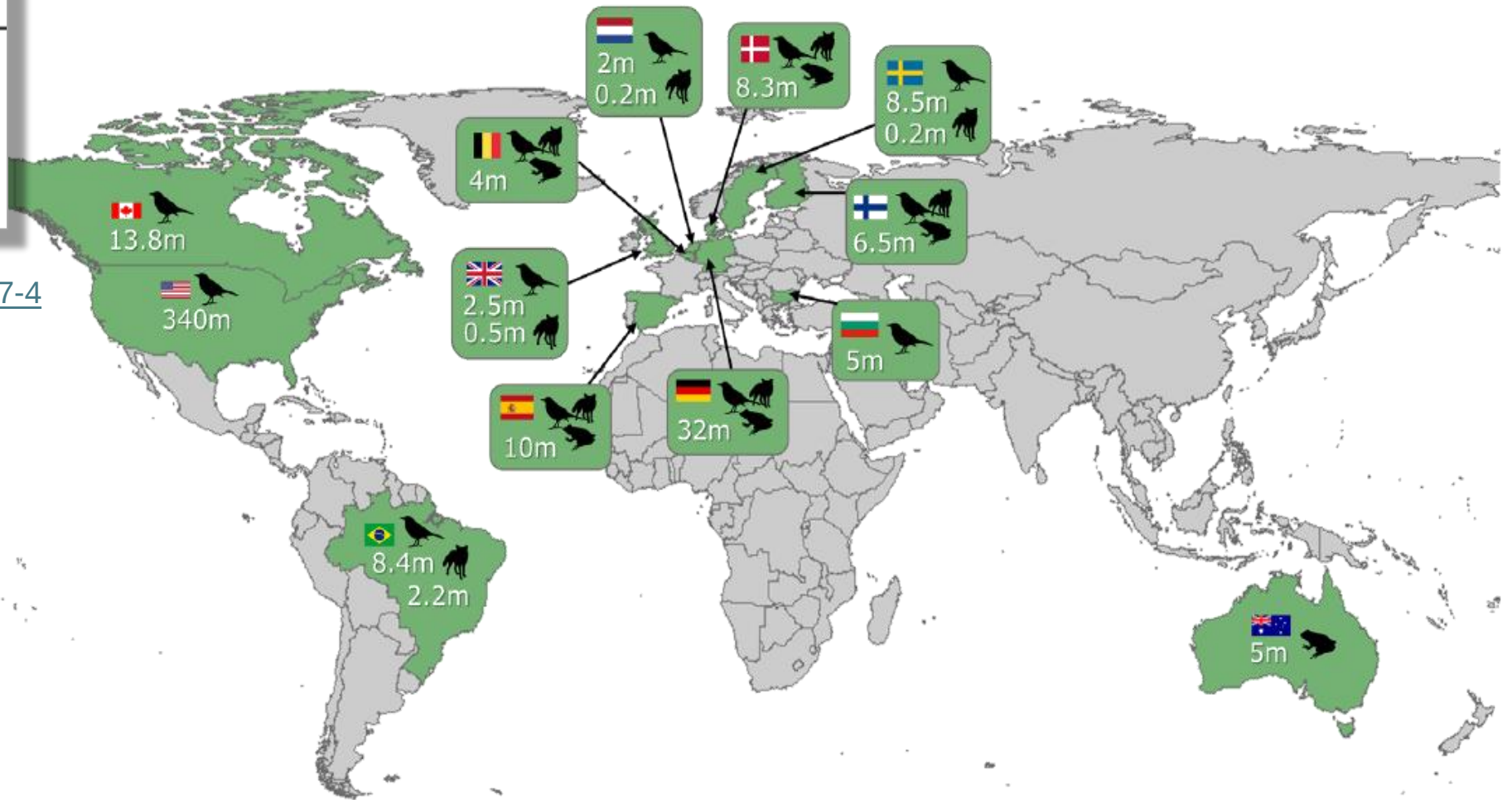
European Journal of Wildlife Research (2020) 66: 18
<https://doi.org/10.1007/s10344-019-1357-4>

REVIEW

The value of monitoring wildlife roadkill

Amy L. W. Schwartz¹  • Fraser M. Shilling²  • Sarah E. Perkins¹ 

<https://doi.org/10.1007/s10344-019-1357-4>

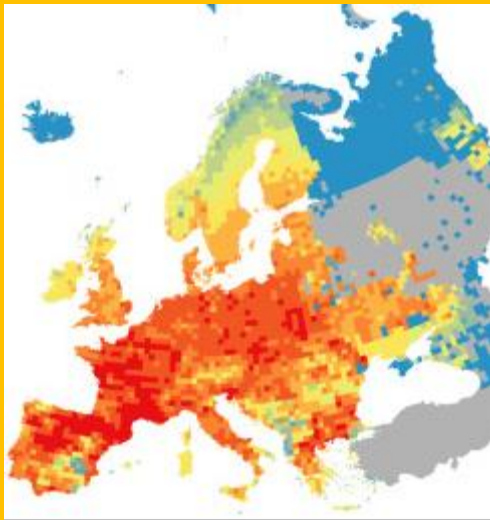


Where? When? Why?

 **Biological Conservation**
Volume 249, September 2020, 108729

A forecasting map of avian roadkill-risk in Europe: A tool to identify potential hotspots

Federico Morelli , Yanina Benedetti , Juan D. Delgado 



<https://doi.org/10.1016/j.biocon.2020.108729>

PLOS One Publish About Browse

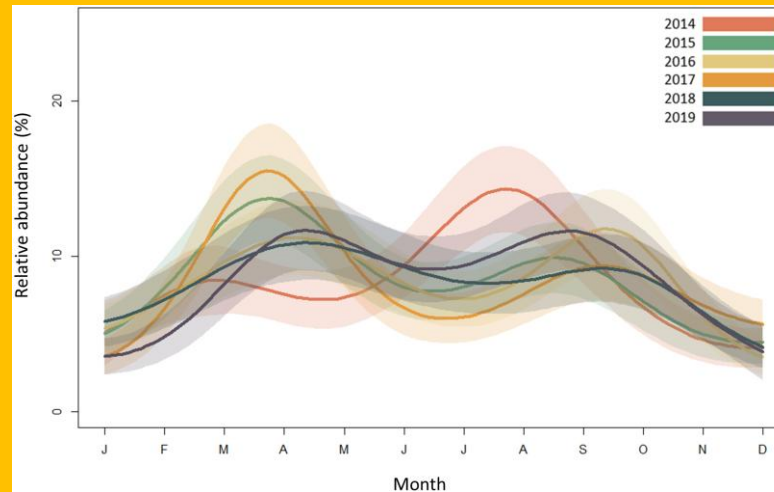
OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

Temporal patterns of wildlife roadkill in the UK

Sarah Raymond , Amy L. W. Schwartz , Robert J. Thomas, Elizabeth Chadwick, Sarah E. Perkins 

Published: October 6, 2021 • <https://doi.org/10.1371/journal.pone.0258083>



<https://doi.org/10.1371/journal.pone.0258083>

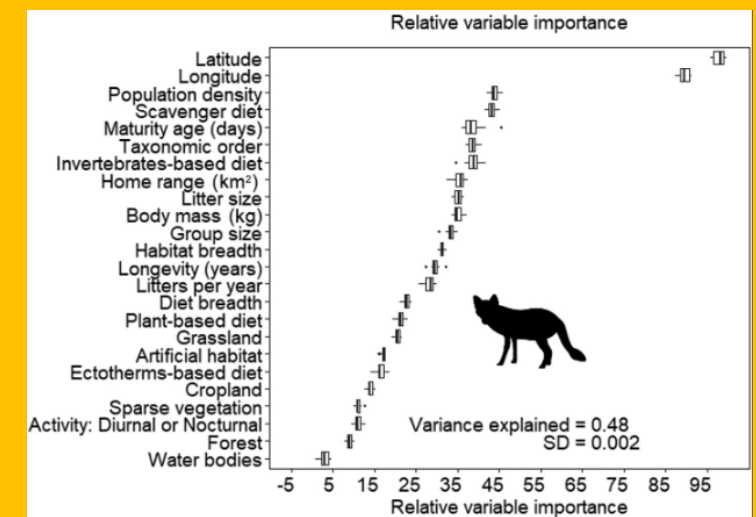
Global Ecology and Biogeography A Journal of Macroecology

RESEARCH ARTICLE | Open Access | CC BY

Roadkill patterns in Latin American birds and mammals

Pablo Medrano-Vizcaino , Clara Grilo, Fernando Antônio Silva Pinto, William Douglas Carvalho, Ramiro Dário Melinski, Eduardo D. Schultz, Manuela González-Suárez

First published: 25 June 2022 | <https://doi.org/10.1111/geb.13557> | Citations: 45



<https://doi.org/10.1111/geb.13557>

Why Collect Big Mortality Data and make it Open access?



Prevent the
collection
of
redundant
data



Standardization
of data in a
user-friendly
format



Valuable
resources for
both local and
macro-scale
analyses



New
hypotheses,
conduct
meta-
analyses

Identify
vulnerable
species



Inform
infrastructure
planning



Support
conservation
priorities



Promote
transparency
&
collaboration



Promotes the
advance of
infrastructure
ecology

Why share data? (transport)



Road safety & Infrastructure Quality

Prevent accidents

Clarify causes of accidents

Protect infrastructure assets



Financial Risk Reduction

Avoid costly accidents and repairs

Enable cost-effective solutions



Planning and Development

Improve infrastructure siting

Enhance mitigation planning

Assess mitigation effectiveness



Public Image and Stakeholder Trust

Strengthen public and stakeholder confidence

Support licensing and permitting processes

Why share data? (energy)

Financial Risk Reduction



Smarter
investment in
mitigation

Lower
monitoring
costs

Access to
innovation

Avoid costly
repairs

Enable cost-effective
solutions

Planning and Development



Improve
infrastructure
siting

Enhance
mitigation
planning

Assess
mitigation
effectiveness



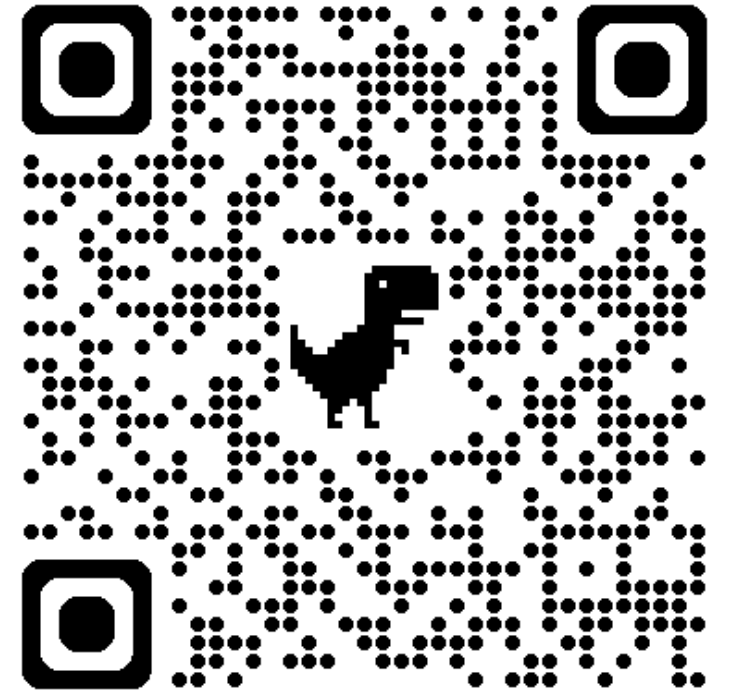
Public Image and Stakeholder Trust

Strengthen public
and stakeholder
confidence

Support
licensing and
permitting
processes

Our project

RISKY



Our project

Implemented by



Clara Grilo, Tomé Neves, Filipa Coutinho Soares, Joana Bernardino, Ana Teresa Marques

Project team members



Rui Figueira



Francisco Pando



Eric Guinard



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Besnard



Thierry
Chambert



Liam Innis



Henrique M. Pereira
Jeremy Dierten

universität freiburg



Manisha Bhardwaj

Akanksha Saxena



Funded by
the European Union



RISKY



Open-access
Mortality Data



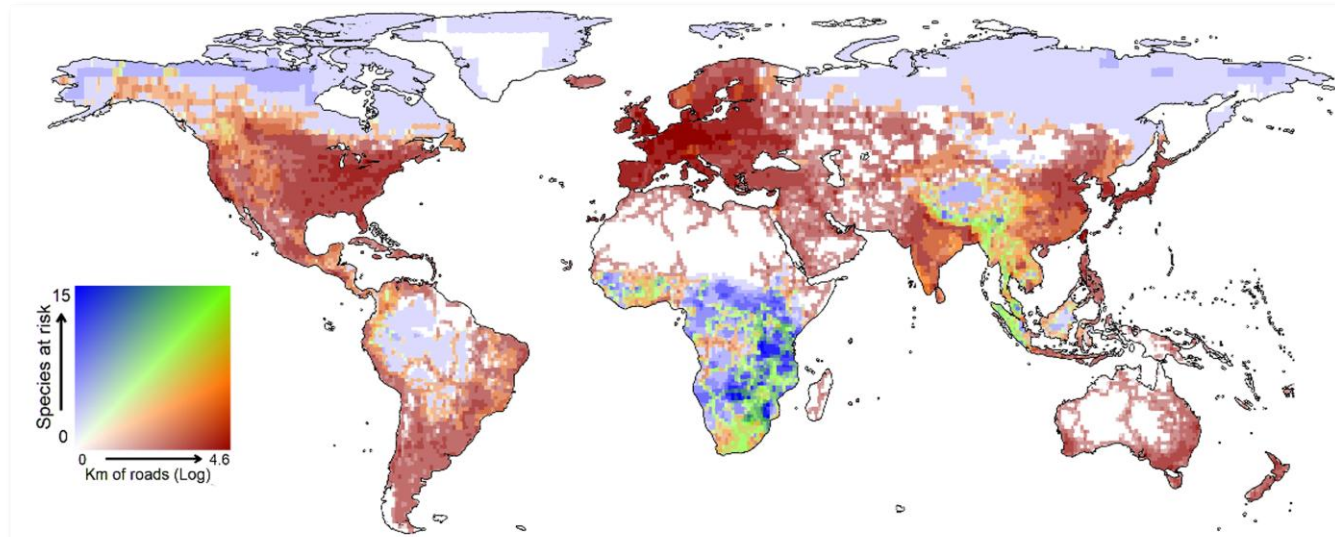
Web platform



User-friendly
Analytical tools



Sensitivity maps



Mortality

Locations

- Literature review
- Invite the authors
- Share data
- Standardize the dataset
- Publish in open access (datapaper)

Rates

- Literature review
- Compile n° deaths & survey effort
- Estimate mortality rates (ind./infrastructure/year)
- Correct mortality rates by carcass persistence
- Publish in open access

Mortality locations (roads)



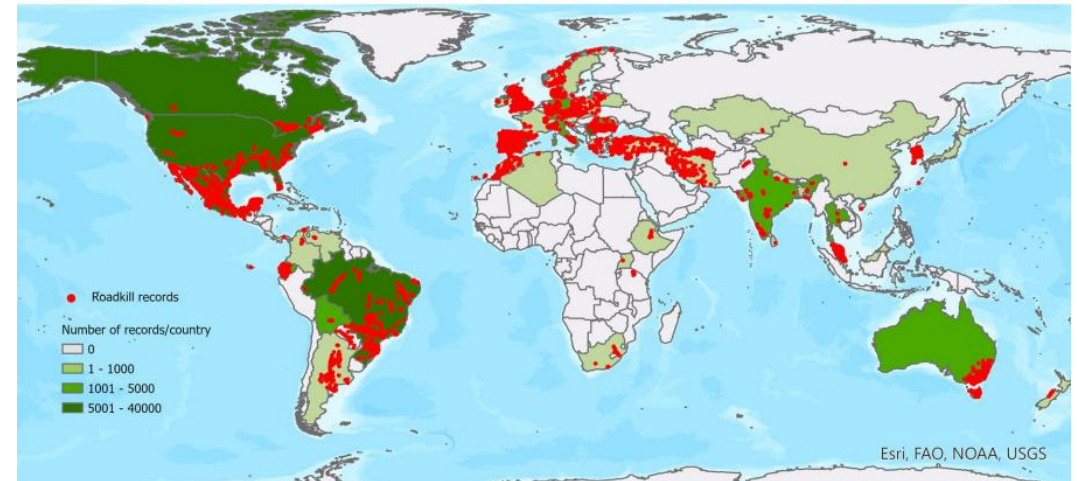
scientific **data**

OPEN
DATA DESCRIPTOR

**Global Roadkill Data: a dataset on
terrestrial vertebrate mortality
caused by collision with vehicles**

Clara Grilo^{1,2,3,4,319}, Tomé Neves^{1,2,3,319}, Jennifer Bates⁵, Aliza le Roux^{6,7}, Pablo Medrano-Vizcaino^{8,9},
Mattia Quaranta^{1,2,3}, Inês Silva¹⁰, Kylie Soanes¹¹, Yun Wang¹² & Data Collection Consortium*

<https://doi.org/10.1038/s41597-024-04207-x>



+ 400 authors + 50 countries + 200 000 records

Mortality locations (railways)



+ 26 authors

+ 12 countries

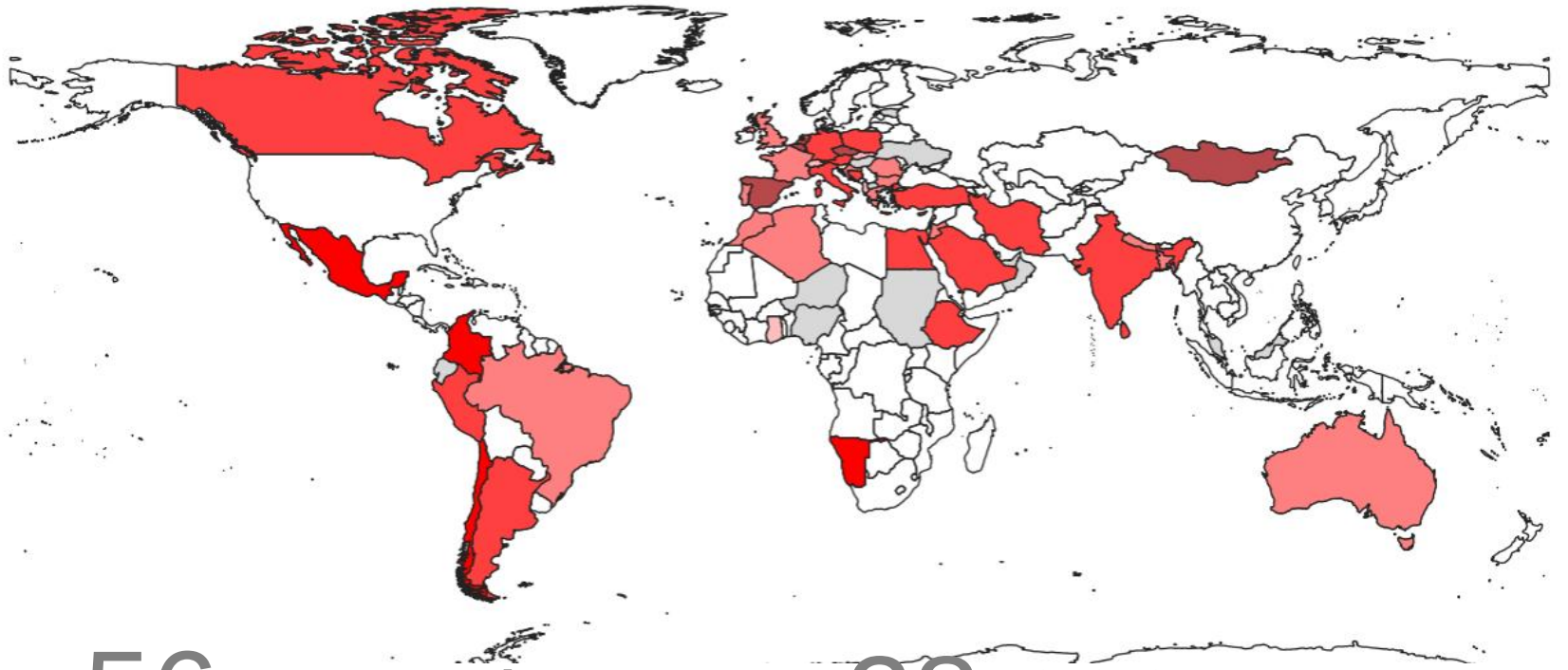
+ 31758 records



18 threatened species



Mortality locations (power lines)

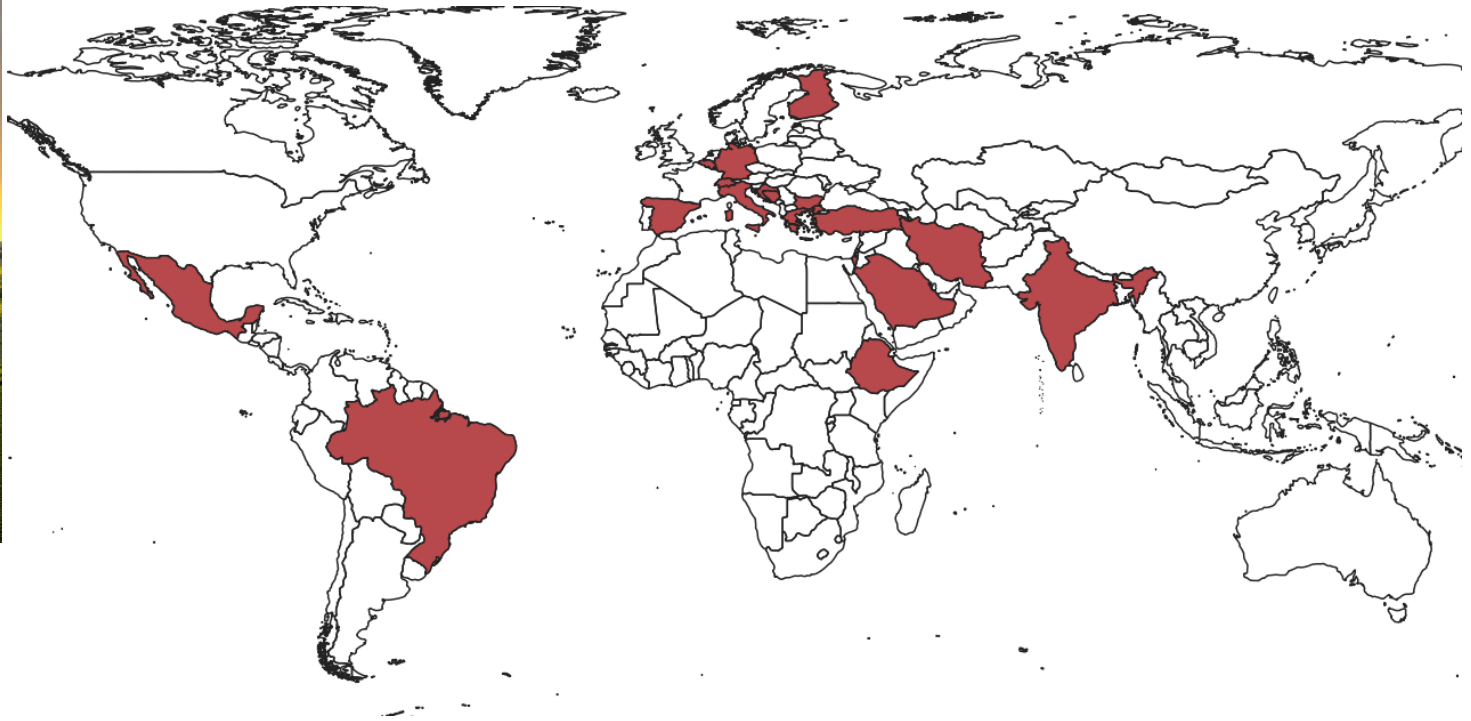


+ 71 authors

+ 56 countries

+ 28 000 records

Mortality locations (wind farms)



+ 63 authors

+ 14 countries

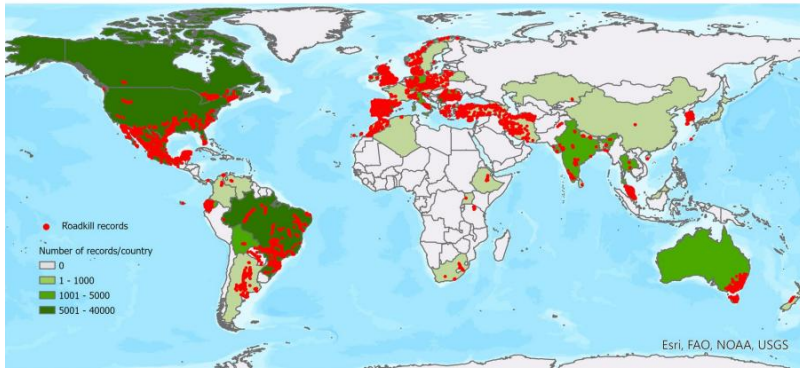
+ 13506 records

Mortality locations

Opportunities

- Identify **knowledge gaps** and define priority areas or taxa that are currently underestimated.
- Provide an overview of **species affected** by mortality, highlighting patterns across taxa.
- Identify **threatened or protected species** documented as roadkill.
- Describe **spatial and temporal patterns** of wildlife mortality.
- Detect **road and landscape characteristics** associated with higher collision likelihood.
- Using systematic surveys allows **assessment of population-level impacts**.

Mortality rates



Mortality rates



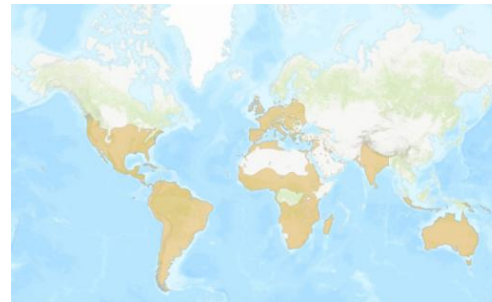
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Species traits



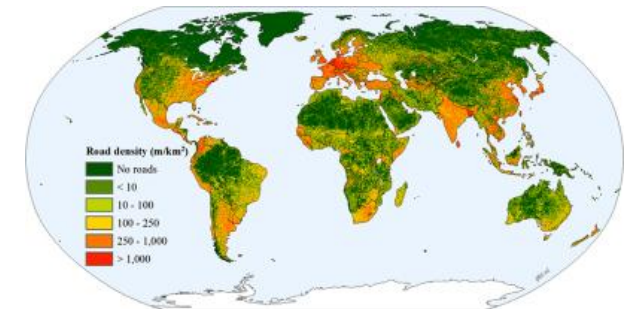
+

Species range



+

Road map



DOI 10.1088/1748-9326/aabd42

Risk of collisions

FRONTIERS IN ECOLOGY and the ENVIRONMENT

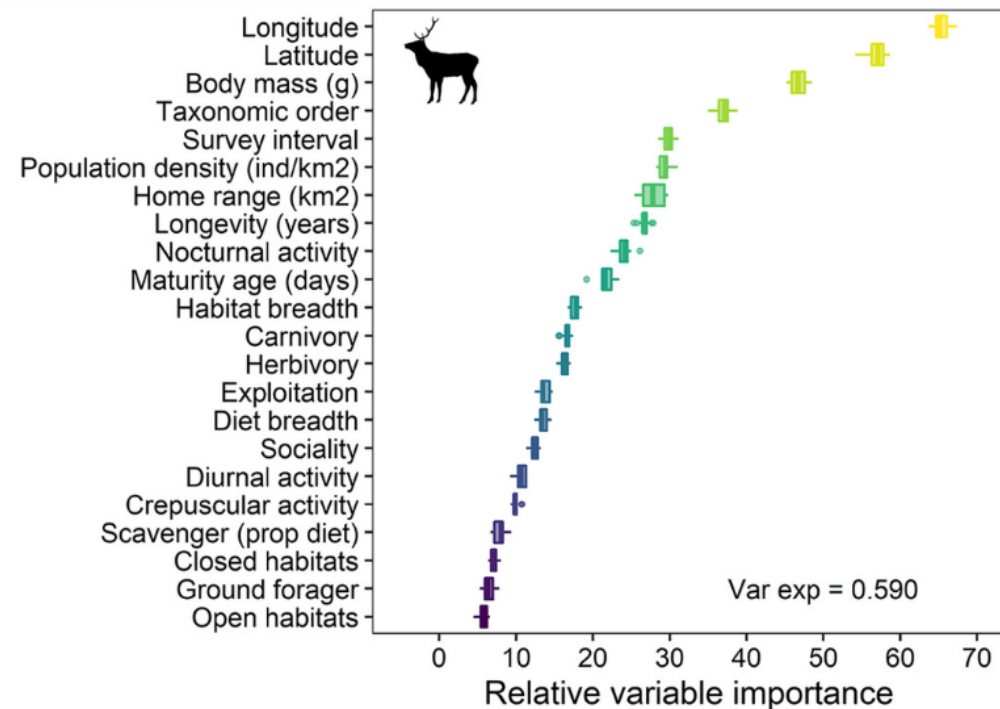
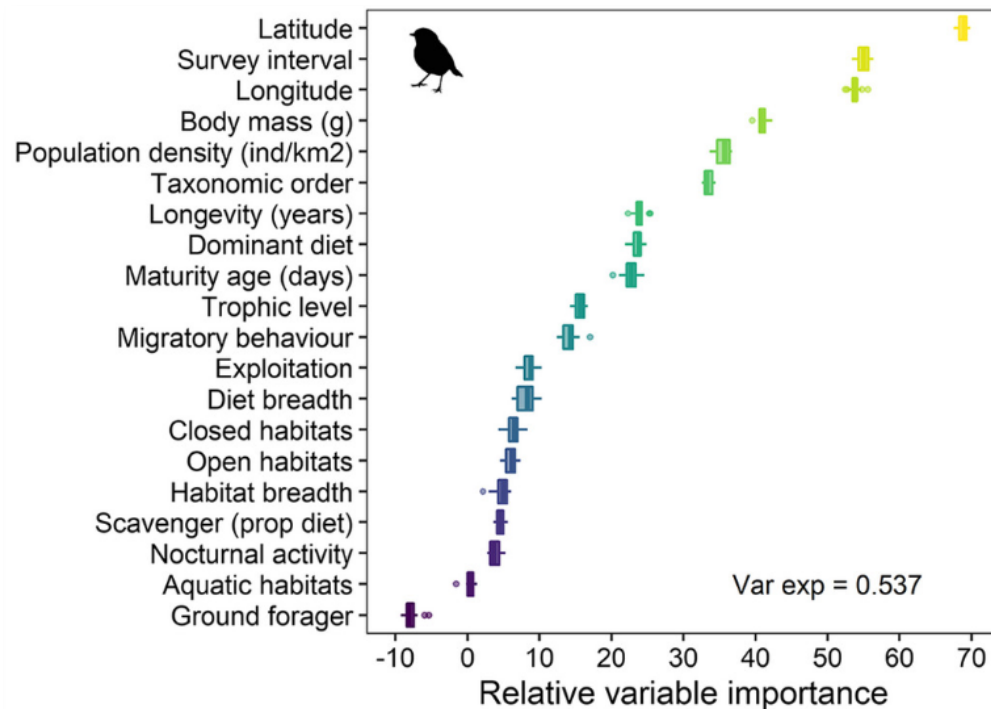
Research Communications | [Full Access](#)

Roadkill risk and population vulnerability in European birds and mammals

Clara Grilo  Elena Koroleva, Richard Andrášik, Michal Bíl, Manuela González-Suárez

First published: 08 June 2020 | <https://doi.org/10.1002/fee.2216> | Citations: 123

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Risk of collisions

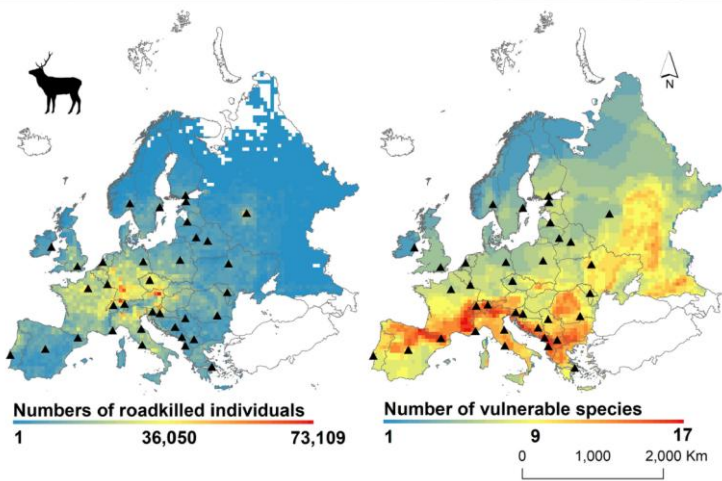
FRONTIERS IN ECOLOGY and the ENVIRONMENT

Research Communications | [Full Access](#)

Roadkill risk and population vulnerability in European birds and mammals

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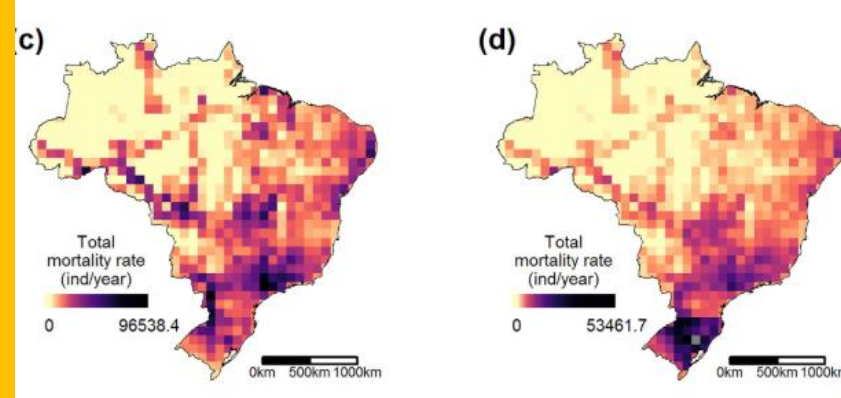
Global Ecology and Biogeography

A Journal of
Macroecology

RESEARCH PAPER | [Full Access](#)

Spatial and species-level predictions of road mortality risk using trait data

Manuela Gonz  lez-Su  rez , Fl  vio Zanchetta Ferreira, Clara Grilo



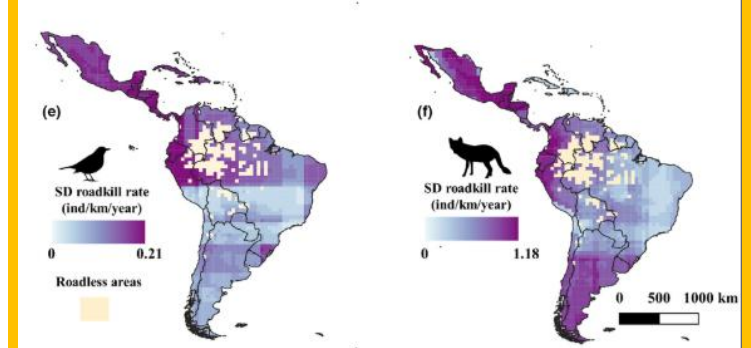
Global Ecology and Biogeography

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RESEARCH ARTICLE | [Open Access](#) |  

Roadkill patterns in Latin American birds and mammals

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<https://doi.org/10.1002/fee.2216>

<https://doi.org/10.1111/geb.13285>

<https://doi.org/10.1111/geb.13557>

Risk of extinction

Mortality rates



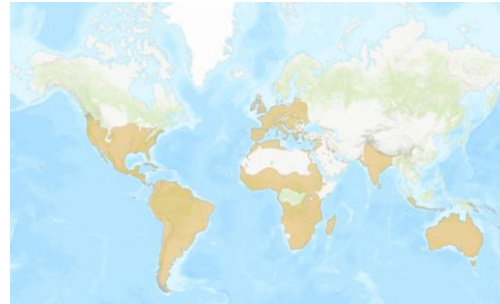
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Demographic parameters



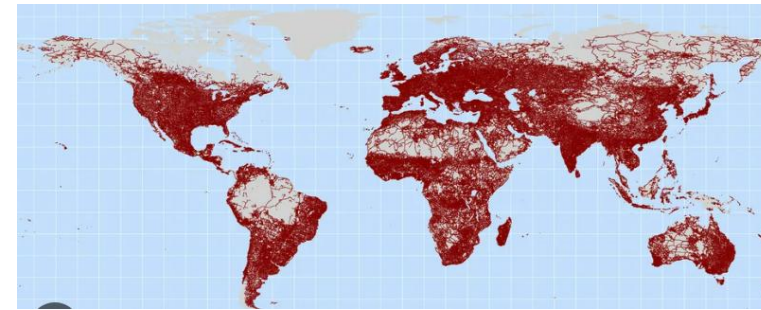
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Species range



+

Infrastructure network

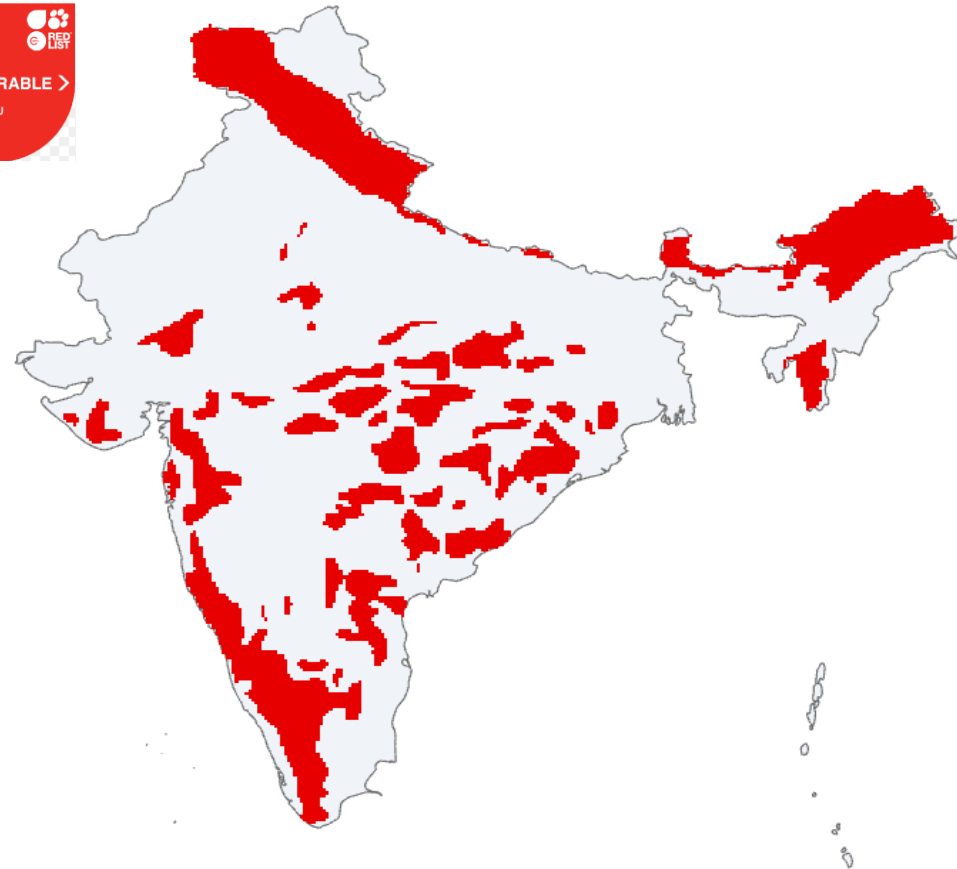


Risk of extinction

Predict which **species** can be impacted by mortality



0.03
ind./km/year



Risk of extinction

Predict which **species** can be impacted by mortality



Leopard

Roadkill rate (ind/km/year)	0.03
Population density (ind/km ²)	0.04
Maturity age (months)	30
Interval between births (months)	19.5
Max litter size	3
Survival rates	♂ cub: 0.39; juvenile:0.80 adult:0.94 ♀ cub: 0.39; juvenile:0.93 adult:0.86
Longevity (months)	194
Max dispersal length (km)	15

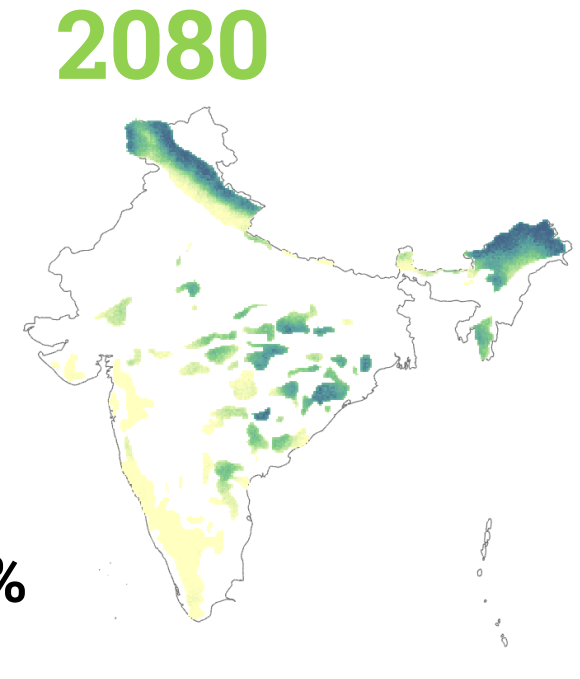
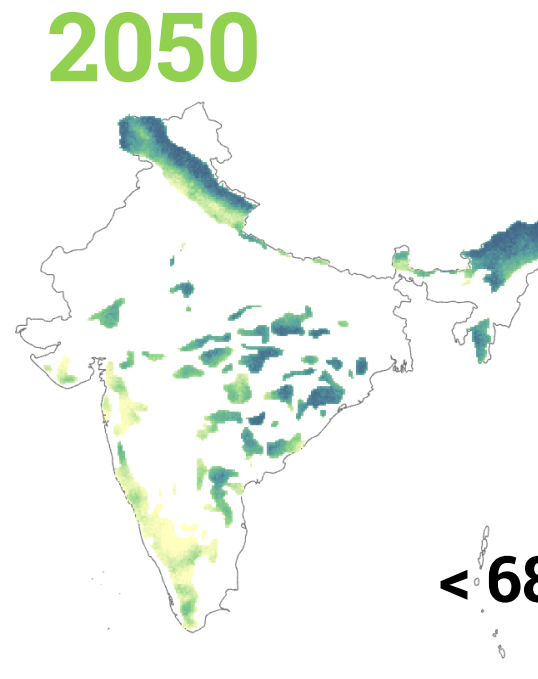
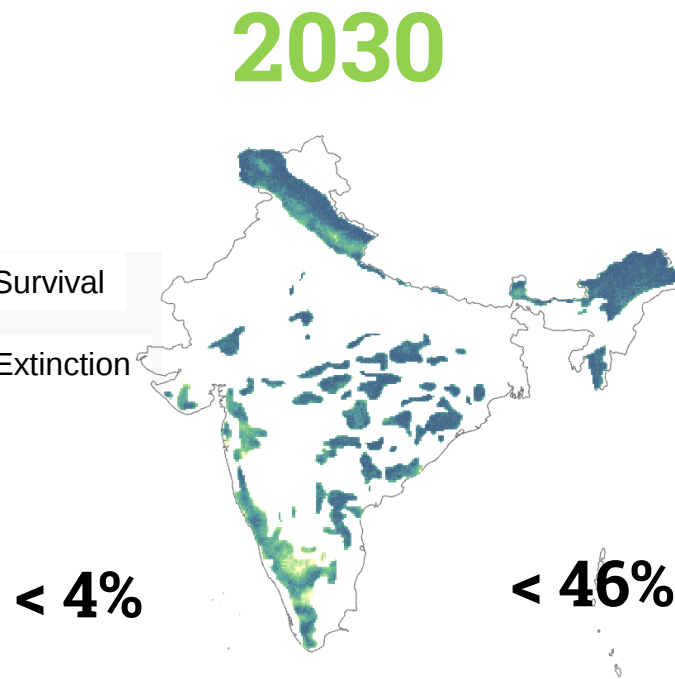
Risk of extinction

Predict which **species** can be impacted by mortality



0.03
ind./km/year

Survival
Extinction



Global Open Access to Mortality Data

Transparency,
not exposure

Data drives
better
decisions

Collaboration
accelerates
progress

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<https://www.gbif.es/>, <https://datos.gbif.es>, <https://elearning.gbif.es>



RISKY 

