



# BEEs

## The LifeWatch ERIC Biodiversity & Ecosystem eScience Conference

Seville  
22-24/05/23



Threats and challenges to biodiversity and ecosystem conservation from an eScience perspective



## An integrative overview of wildlife damage in a human-dominated world

# An integrative overview of wildlife damage in a human-dominated world

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**Wildlife damage:**

*Human-wildlife interaction in which humans (or both) are negatively affected*

**Complex interactions!**

- ✓ *Different causes, damaging species, affected subject, consequences ...*



**WOODPECKERS' BEAK WORK CLIPS SHUTTLE'S WINGS**

By **Curt Supplee**  
June 3, 1995

The mighty space shuttle Discovery, which has braved the fearsome voids of space, could not survive the yellow-shafted flicker.

NASA yesterday was forced to cancel Discovery's planned June 8 launch because the industrious flickers -- a type of woodpecker common to the Cape Canaveral area -- had pecked 135 holes in the foam insulation.

The tank holds extremely cold liquid oxygen, and the formation of ice that could fall off the tank during launch. In a few days, the marauding avians gouged the tank.

Repair personnel reportedly could not remove the foam with a crane. So the 184-foot-long shuttle, intended to place a NASA satellite in orbit, was intended to place a NASA satellite in orbit. There was a 12-inch-long bird, who were believed to be nesting at the time, that had been implicated in the incident, although the exact number of birds was not reported that NASA "used plastic owl decoys, horns and other things" -- but to no avail.



**OelDiario.es**

Desalambre

**El conflicto entre chimpancés y humanos que mata niños en Uganda por culpa de la deforestación**

En el primer semestre de 2022, cuatro niños fallecieron en ataques de chimpancés en zonas rurales de Uganda. La deforestación en el trópico ugandés aumenta los incidentes entre chimpancés y humanos y obliga a educar para un mundo en el que será necesario "A shame for the world: Uganda's fragile forest ecosystem destroyed for sugar"



Animal 16:10, 20-Nov-2020

**Birds of prey offer help to starling nuisance on French island**



## An integrative overview of wildlife damage in a human-dominated world

*... common patterns?*

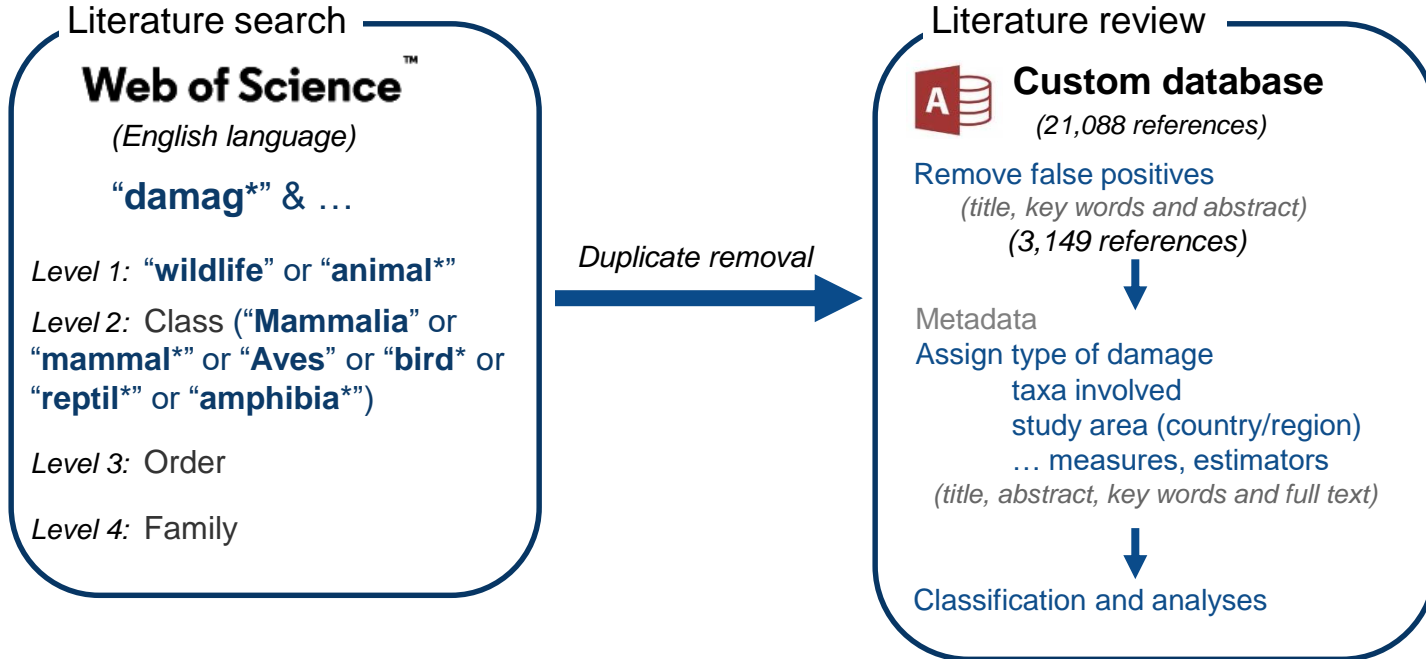
*A first approach looking at the scientific literature:*

- Classify the different types of wildlife damage and quantify their relative importance in research
- Identify the wildlife species/taxa causing damage
- Document the spatial patterns on wildlife damage research



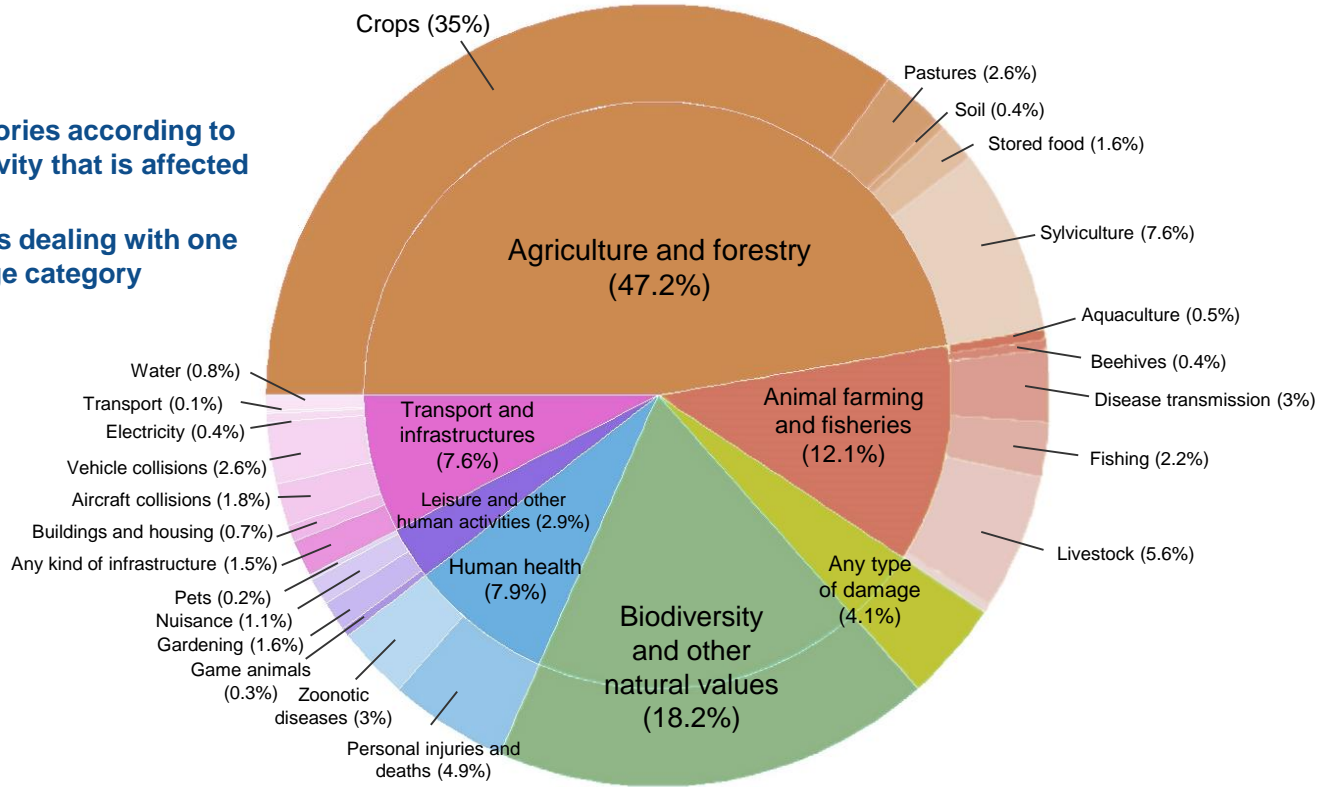
*Focus on vertebrate tetrapods...*



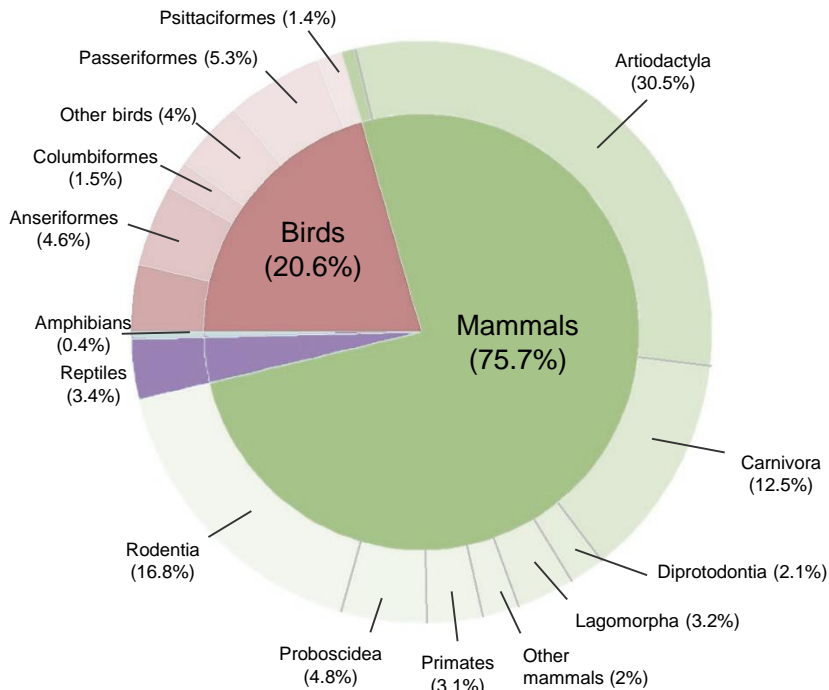


✓ **6 broad categories according to the human activity that is affected**

✓ **83% of studies dealing with one damage category**



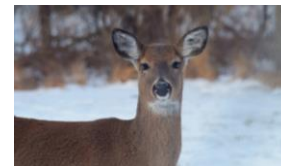
825 species, 152 families, 42 orders  
61% of studies dealing with one species

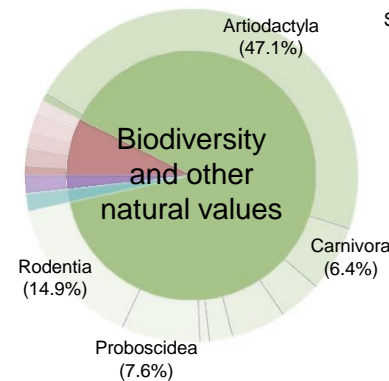
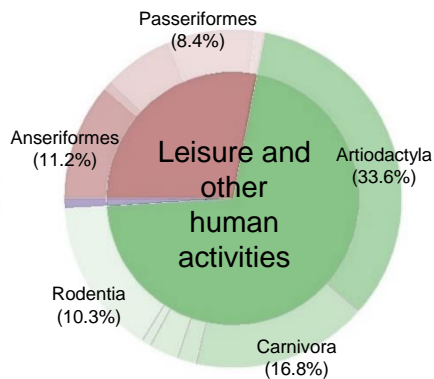
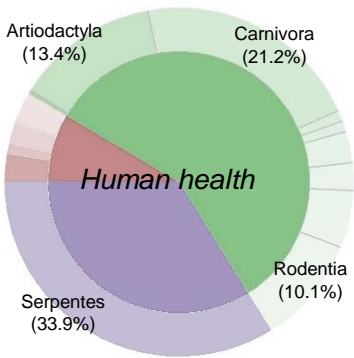
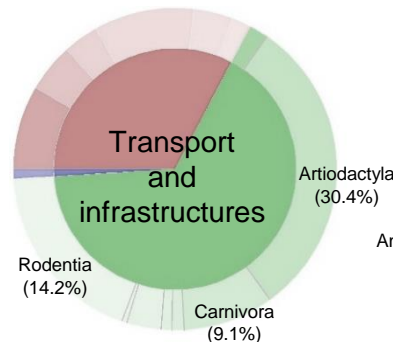
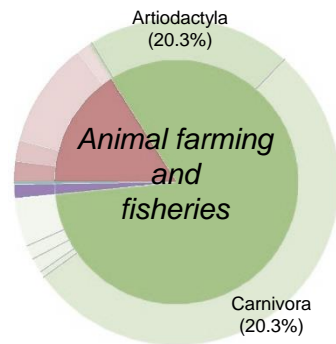
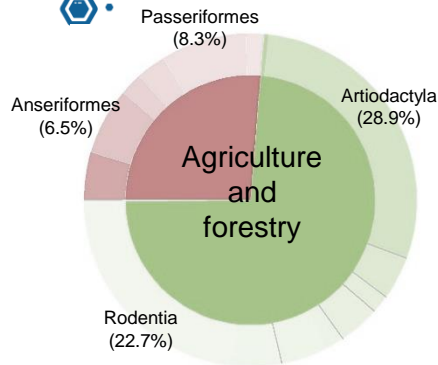


25 species (3%) → 50% of publications

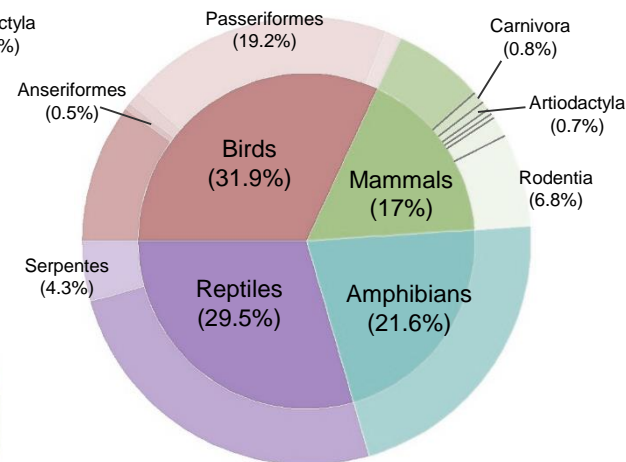
Class	Order	Family	Species	n pubs
Mammalia	Artiodactyla	Suidae	<i>Sus scrofa</i>	237
Mammalia	Artiodactyla	Cervidae	<i>Odocoileus virginianus</i>	156
Mammalia	Artiodactyla	Cervidae	<i>Cervus elaphus</i>	139
Mammalia	Proboscidea	Elephantidae	<i>Loxodonta africana</i>	121
Mammalia	Artiodactyla	Cervidae	<i>Capreolus capreolus</i>	81
Mammalia	Artiodactyla	Cervidae	<i>Alces alces</i>	65
Mammalia	Lagomorpha	Leporidae	<i>Oryctolagus cuniculus</i>	65
Mammalia	Carnivora	Canidae	<i>Canis lupus</i>	61
Mammalia	Artiodactyla	Cervidae	<i>Cervus nippon</i>	59
Mammalia	Rodentia	Muridae	<i>Rattus rattus</i>	57
Mammalia	Carnivora	Ursidae	<i>Ursus arctos</i>	56
Mammalia	Rodentia	Muridae	<i>Mus musculus</i>	47
Mammalia	Artiodactyla	Cervidae	<i>Odocoileus hemionus</i>	43
Aves	Anseriformes	Anatidae	<i>Branta canadensis</i>	42
Aves	Passeriformes	Icteridae	<i>Agelaius phoeniceus</i>	41
Mammalia	Proboscidea	Elephantidae	<i>Elephas maximus</i>	39
Aves	Passeriformes	Sturnidae	<i>Sturnus vulgaris</i>	36
Mammalia	Carnivora	Ursidae	<i>Ursus americanus</i>	35
Mammalia	Diprotodontia	Phalangeridae	<i>Trichosurus vulpecula</i>	33
Mammalia	Artiodactyla	Cervidae	<i>Dama dama</i>	27
Mammalia	Rodentia	Muridae	<i>Rattus norvegicus</i>	26
Mammalia	Carnivora	Felidae	<i>Panthera pardus</i>	25
Mammalia	Rodentia	Cricetidae	<i>Microtus arvalis</i>	25
Aves	Columbiformes	Columbidae	<i>Columba livia</i>	23
Aves	Suliformes	Phalacrocoracidae	<i>Nannopterum auritum</i>	22
Mammalia	Carnivora	Canidae	<i>Vulpes vulpes</i>	22
Mammalia	Carnivora	Canidae	<i>Canis latrans</i>	21
Mammalia	Carnivora	Ursidae	<i>Ursus thibetanus</i>	21
Mammalia	Rodentia	Castoridae	<i>Castor canadensis</i>	20
Mammalia	Rodentia	Muridae	<i>Rattus argentiventer</i>	20
Aves	Anseriformes	Anatidae	<i>Anser anser</i>	19
Aves	Passeriformes	Passeridae	<i>Passer domesticus</i>	19
Mammalia	Carnivora	Procyonidae	<i>Procyon lotor</i>	18
Reptilia	Serpentes	Viperidae	<i>Bothrops asper</i>	18

20%



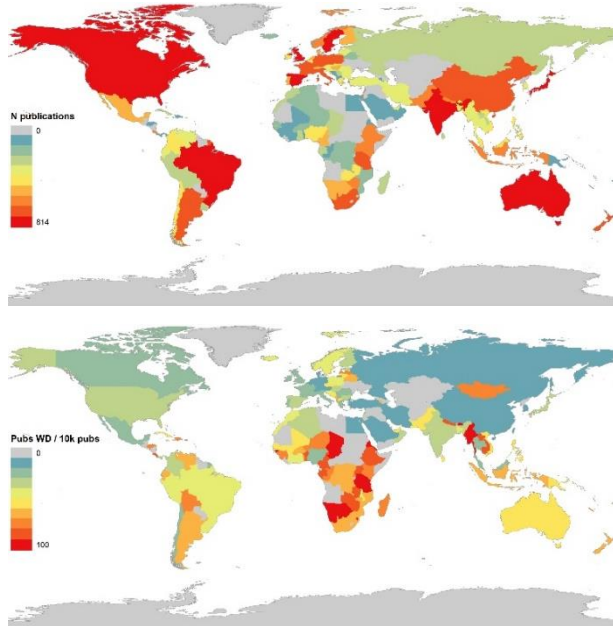


**Number of species**

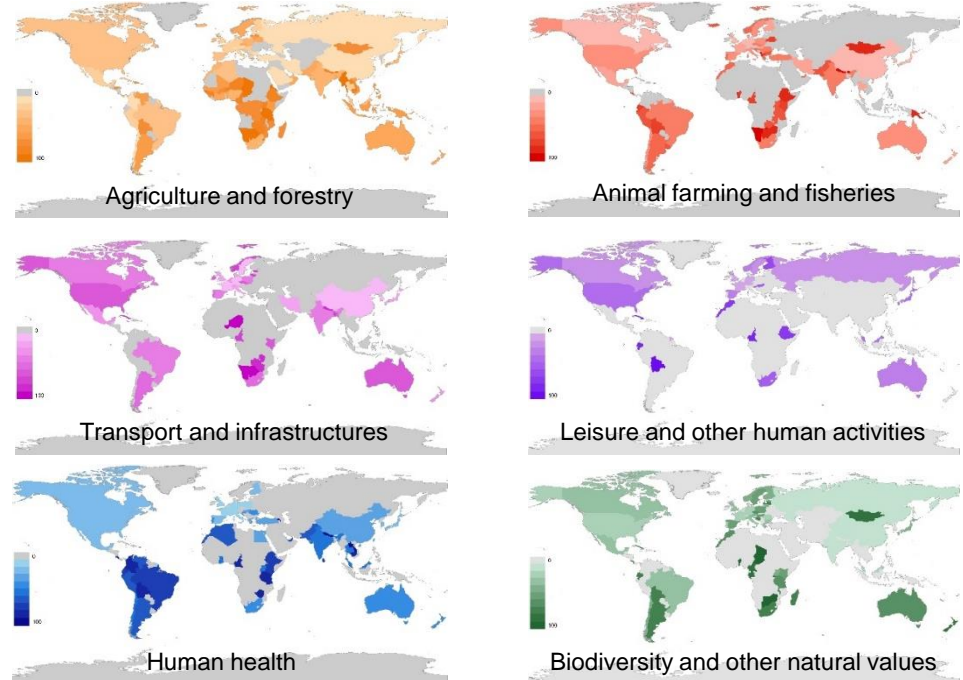




✓ **Biased towards economically developed countries**



✓ **Similar spatial patterns across damage categories**





## Potential bias in WD scientific publications ...

(research activity, species interest, human perception ...)

...some broad conclusions helpful to formulate hypothesis:

- ✓ *The types of damage that receive more attention imply direct competition for resources (food, space, ....)*
- ✓ *A few species appear to cause most of the damage and particular groups (orders) are causing almost any type of damage*
- ✓ *A few species (including introduced species) are damaging species worldwide, although there are some differences across countries/regions.*





*Two major drivers?*

*Anthropization of natural habitats*

Decreasing/threatened species

Emerging economies/ ↑ population

“spillover damage”

*Favored conditions for some species*

Increasing/non-threatened species

Developed economies/ = population

“opportunistic damage”

**Species traits**  
(demography, ecology, behavior, ...)



**Human interface traits**  
(demography, economy, ecosystem health, ...)



**Wildlife damage**



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Thank you! | [www.lifewatch.eu/bees-2023](http://www.lifewatch.eu/bees-2023)

