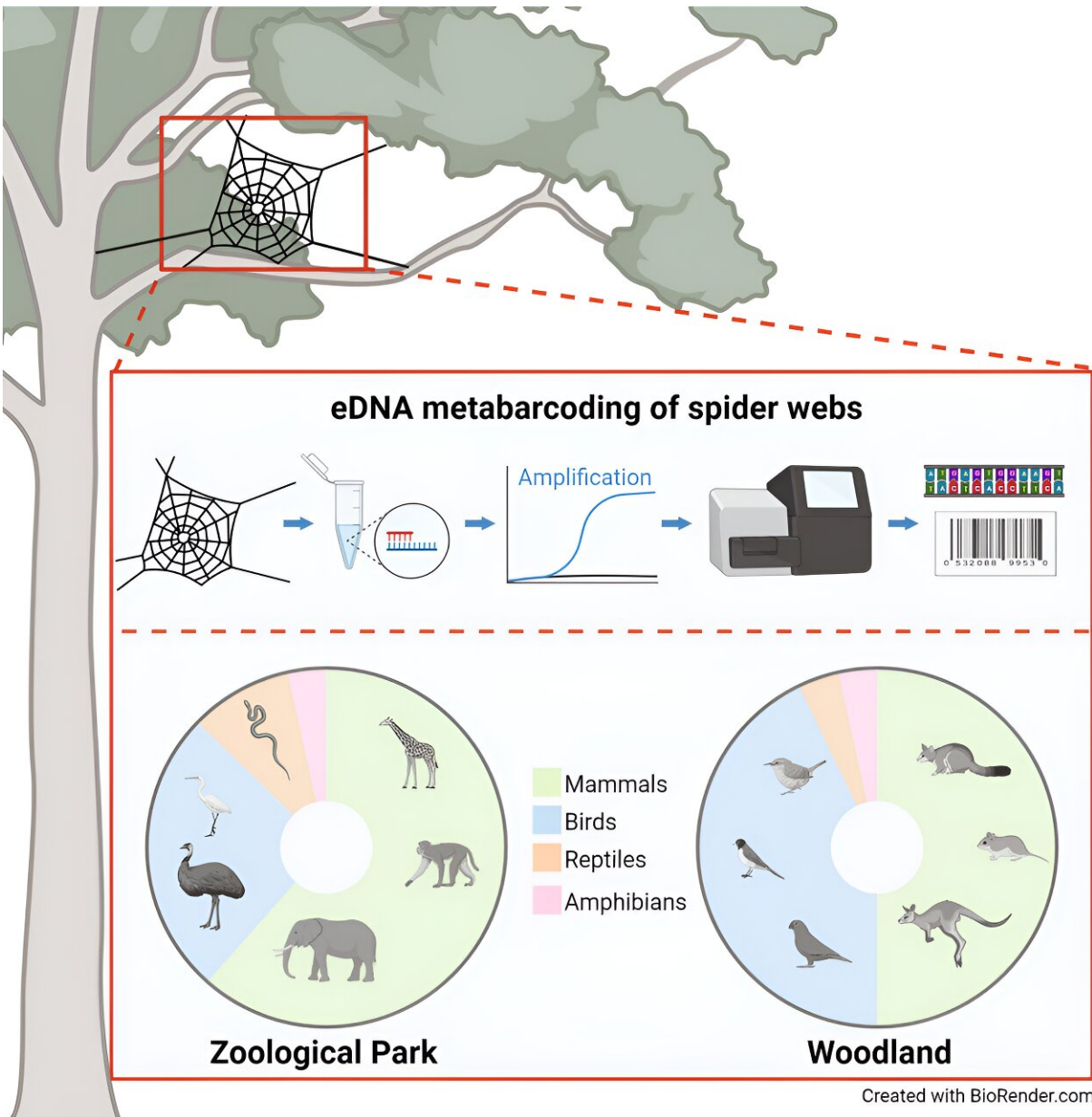


# Nature's DNA traps: Spider webs put new spin on wildlife research

January 31 2024, by Simone Harris



Graphical abstract. Credit: *iScience* (2024). DOI: 10.1016/j.isci.2024.108904

Spiders might be silent heroes in helping us understand and keep track of animals, with new Curtin research revealing their webs act like natural traps for tiny bits of environmental DNA (eDNA) from vertebrates, which could change how we learn about wildlife.

The groundbreaking study analyzed 49 webs from a [wildlife sanctuary](#) in Perth's hills and at Perth Zoo and identified the genetic signatures of 93 different animals, from birds and native mammals to meerkats and elephants.

The [research paper](#), "[Spider webs capture environmental DNA from terrestrial vertebrates](#)," has been published in *iScience*.

Lead author Ph.D. candidate Joshua Newton, from Curtin's School of Molecular and Life Sciences, said spider webs might be a clever way to keep an eye on what animals are around us.

"Spider webs are not just beautiful, they could be our secret weapon to better understanding nature. Our study shows that these webs can help us keep tabs on different animals without disturbing them," Mr. Newton said.

"These webs, often overlooked in biodiversity studies, proved to be reservoirs of genetic information. Environmental DNA is composed of miniscule fragments of DNA left behind by organisms in the form of shed skin cells, hair or bodily fluids and the spider webs act as passive biofilters.

"With only trace amounts of DNA needed to identify animals, this cheap

and non-invasive method could be a game-changer in how we explore and protect our terrestrial biodiversity."

Research supervisor Professor Morten Allentoft, head of the TrEnD Lab from Curtin's School of Molecular and Life Sciences, said the research may pave new ways to survey wildlife in challenging and inhospitable environments.

"We had this crazy idea that spider webs would capture airborne DNA from local vertebrates. Our initial results from Perth's hills were promising with a bunch of local wildlife detections, but the true potential of this method unfolded when we repeated the spider web sampling in Perth Zoo and suddenly got giraffe and rhinoceros DNA in the webs," Professor Allentoft said.

"Scientists typically rely on direct observations to study animals, but this research widens the scope of eDNA-based biodiversity monitoring, highlighting the efficacy of spider webs in capturing vertebrate eDNA.

"Our results even identified [invasive species](#), such as red foxes, house mice and black rats, showcasing the potential of [spider webs](#) as tools for ecological monitoring."

**More information:** Joshua P. Newton et al, Spider webs capture environmental DNA from terrestrial vertebrates, *iScience* (2024). [DOI: 10.1016/j.isci.2024.108904](https://doi.org/10.1016/j.isci.2024.108904)

Provided by Curtin University

Citation: Nature's DNA traps: Spider webs put new spin on wildlife research (2024, January 31) retrieved 29 April 2024 from

<https://phys.org/news/2024-01-nature-dna-spider-webs-wildlife.html>

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