Consider the Research

Data Play

Environmental DNA holds significant promise as a non-invasive tool for tracking terrestrial biodiversity. However, in non-homogenous terrestrial environments, the continual exploration of new substrates is crucial. Here we test the hypothesis that spider webs can act as passive biofilters, capturing eDNA from vertebrates present in the local environment. Using a metabarcoding approach, we detected vertebrate eDNA from all analyzed spider webs (N = 49). Spider webs obtained from an Australian woodland locality yielded vertebrate eDNA from 32 different species, including native mammals and birds. In contrast, webs from Perth Zoo, less than 50 km away, yielded eDNA from 61 different vertebrates and produced a highly distinct species composition, largely reflecting exotic species hosted in the zoo. We show that higher animal biomass and proximity to animal enclosures increased eDNA detection probability in the zoo. Our results indicate a tremendous potential for using spider webs as a cost-effective means to monitor terrestrial vertebrates.

The abstract above was obtained from Newton et al., Spider webs capture environmental DNA from terrestrial vertebrates, *iScience* (2024), https:// doi.org/10.1016/j.isci.2024.108904

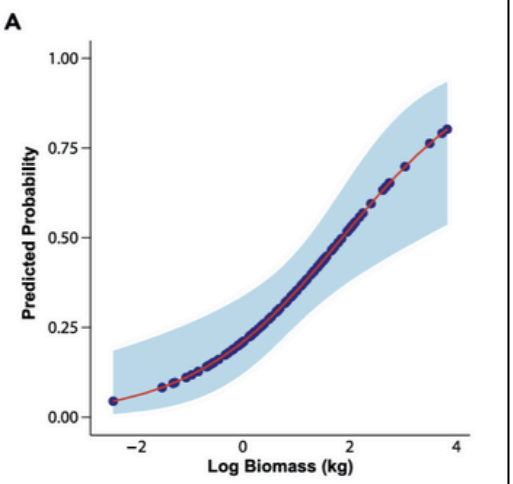
Directions: Read the summary above to answer the following questions.

What were the researchers trying to figure out?

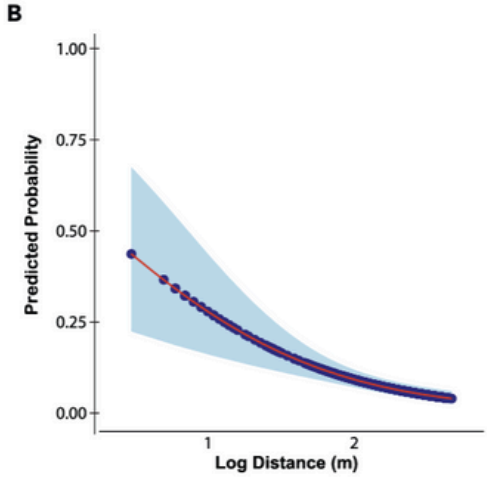
Researchers collected spider webs from a natural area and a nearby zoo. According to their study what two things had the greatest influence on the likelihood (probability) an organism's DNA would be detected in the spider web?

What did the researchers of this study conclude?

The graphs below illustrate the detection probability of vertebrate DNA from spider webs at the Perth Zoo.



Graph A: Illustrates the relationship between the biomass of organisms in the area and likelihood (probability) of detecting its DNA in spider webs.



Graph B: Illustrates the relationship between an organisms distance to the spider web and likelihood (probability) of detecting its of DNA in spider webs.

Newton et al., Spider webs capture environmental DNA from terrestrial vertebrates, iScience (2024), https:// doi.org/10.1016/j.isci.2024.108904

Based on the graphs above, which organism in each example has the highest probability of being detected in eDNA obtained from a spider web? Explain your answer with data.