

Effect of Heavy Metals on Fungal Biodiversity

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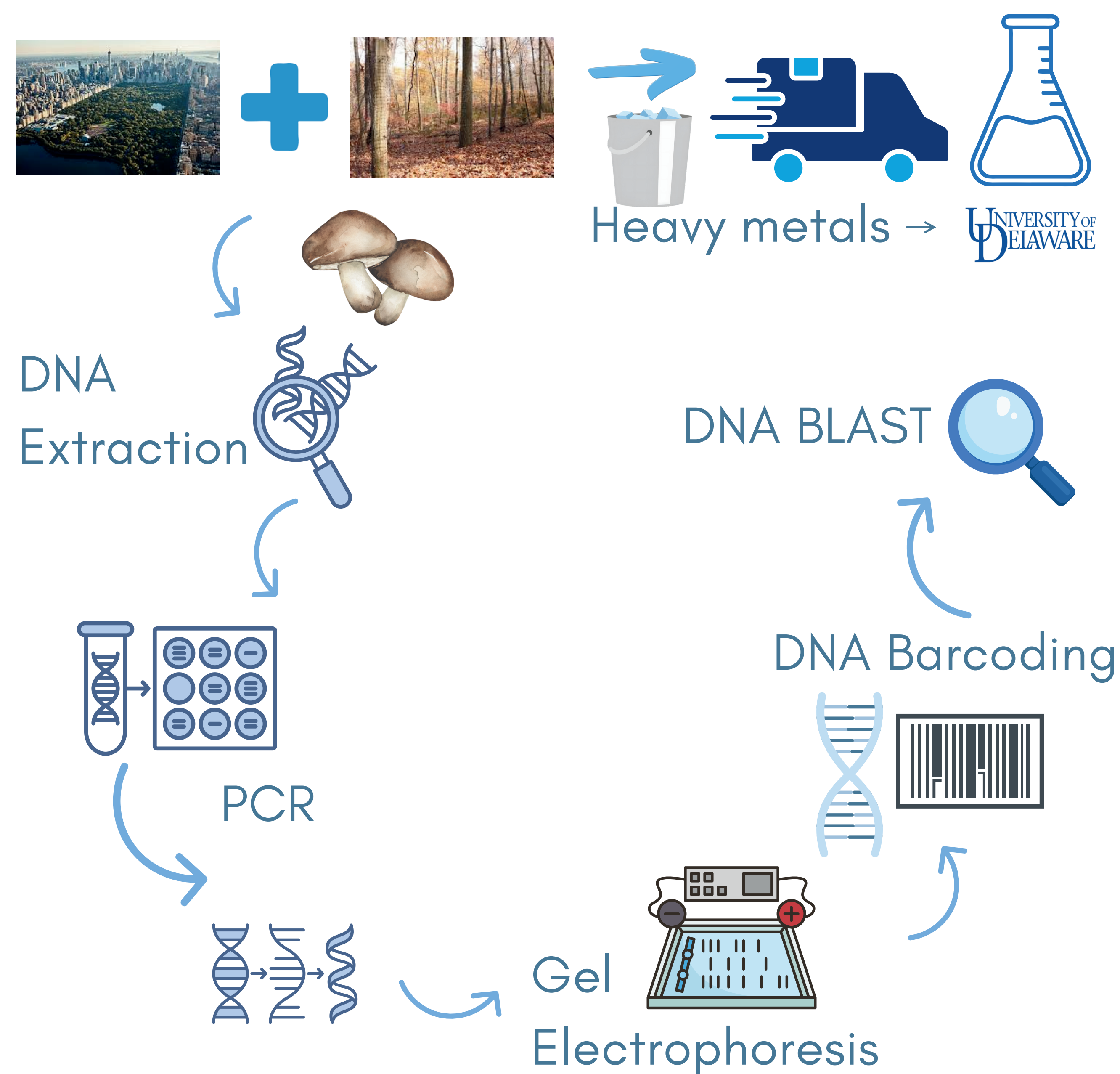
Introduction

- Soil contamination by heavy metals is a growing environmental problem that is having a serious impact on our ecosystems, agriculture, and health
- The most prominent heavy metals include: arsenic, cadmium, chromium, mercury, lead, copper, zinc and nickel
- As decomposers, fungi play an important role in maintaining healthy ecosystems. They have also been shown to have the ability to remove toxic contaminants from the soil.

Research Question

How do heavy metal concentrations in soils from Central Park and Black Rock Forest relate to fungal biodiversity?

Methods



Results

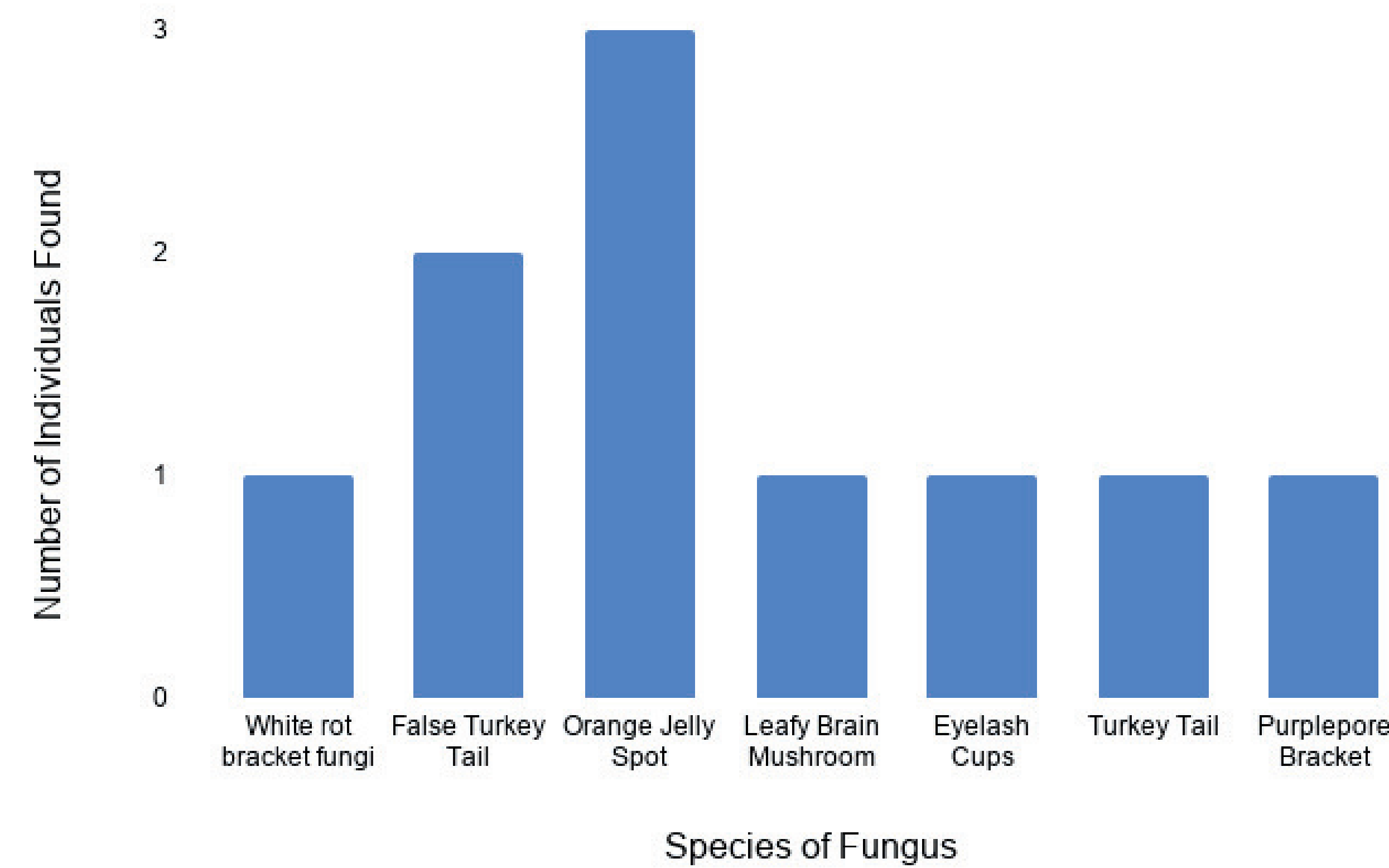


Figure 1: Fungal Biodiversity in Black Rock Forest. This data set has a sample size of 7. The biodiversity index is 0.7.

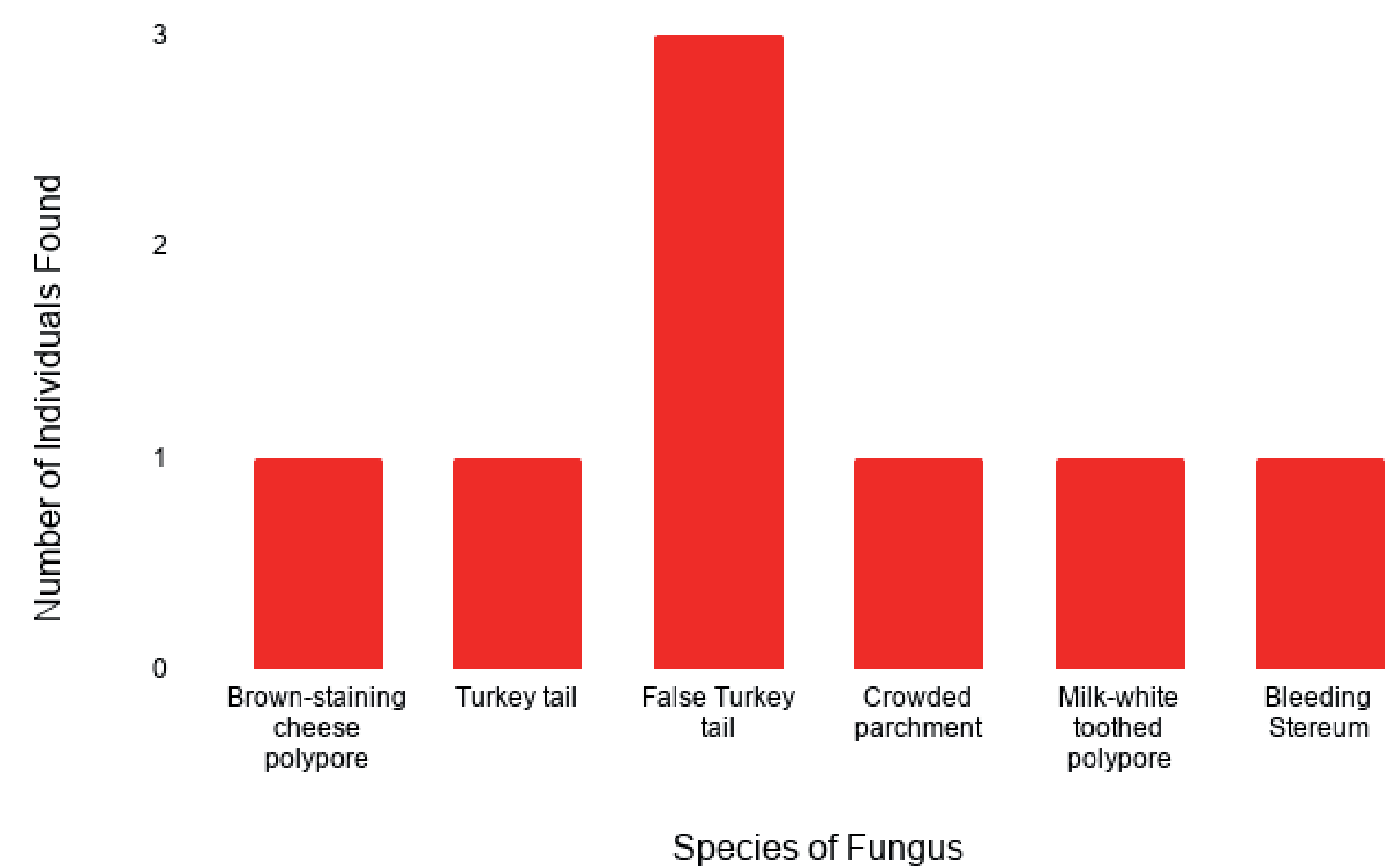


Figure 2: Fungal Biodiversity in Central Park. The data set has a sample size of 6. The biodiversity index is 0.75.

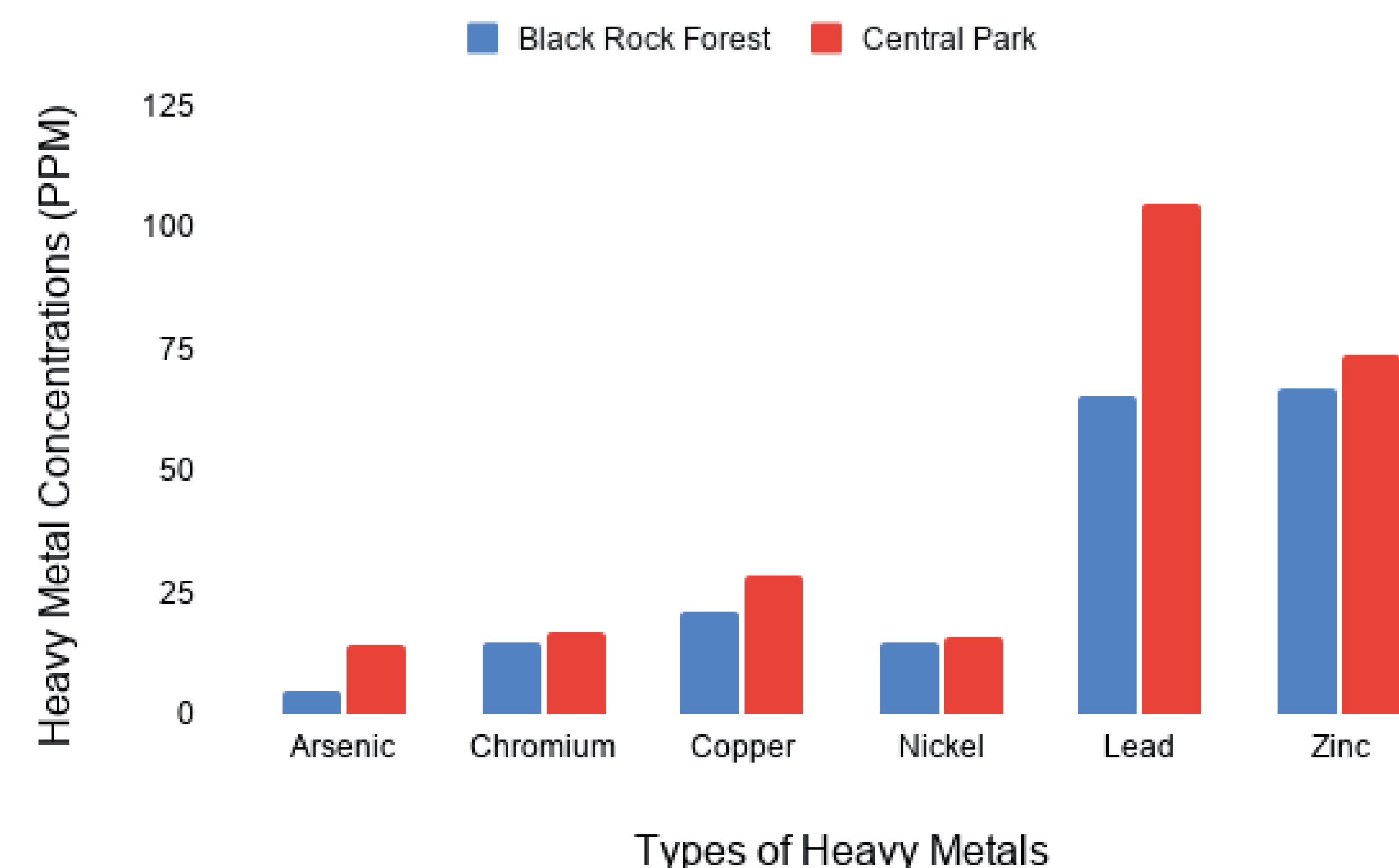


Figure 3. Heavy Metal Concentration (ppm) in Black Rock Forest and Central Park. At each location, six samples were dug at a depth of 4 inches and then homogenized.

Discussion

- Measuring off of the Simple Index of Diversity, the Black Rock Forest data set has less biodiversity than Central Park.
- However, it is important to consider that we had a small sample size, and a number of our Central Park samples didn't succeed. Many of the Central Park samples also seemed visually similar.
- There is a higher concentration of every single heavy metal in Central Park than in Black Rock Forest.
- This is alarming because heavy metals are non-biodegradable, meaning that they will continue to accumulate. This will disrupt existing microbial communities and disrupt nutrient cycling, as well as pose serious health risks to visitors.
- Another possibility is that higher heavy metal concentrations may select for different species of fungi

Future Research

- In the future, we would run this experiment again with a much larger sample size to get a more accurate biodiversity reading
- Explore the possible remedial effects of fungi on high heavy metal concentrations

Acknowledgements



References

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