Capstone Project: Biodiversity in National Parks

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Contents

Conservation Status

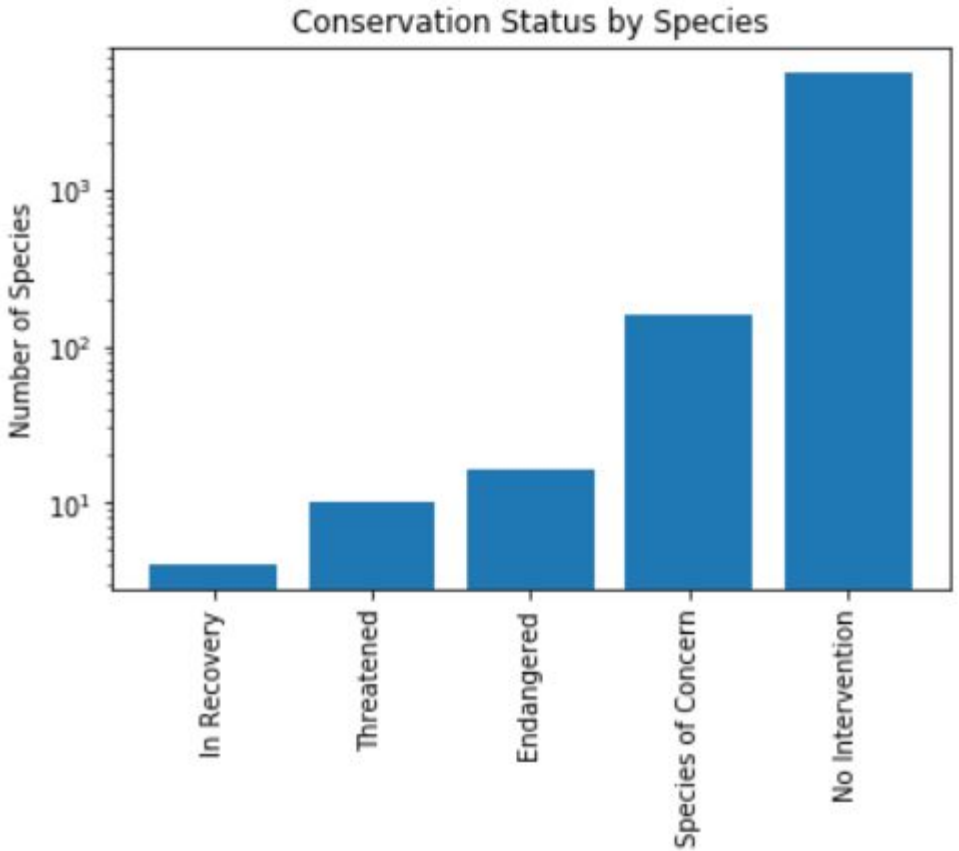
Of the 5541 unique species listed, the majority are not protected.

151 are listed as species of concern

10 are threatened

15 are endangered

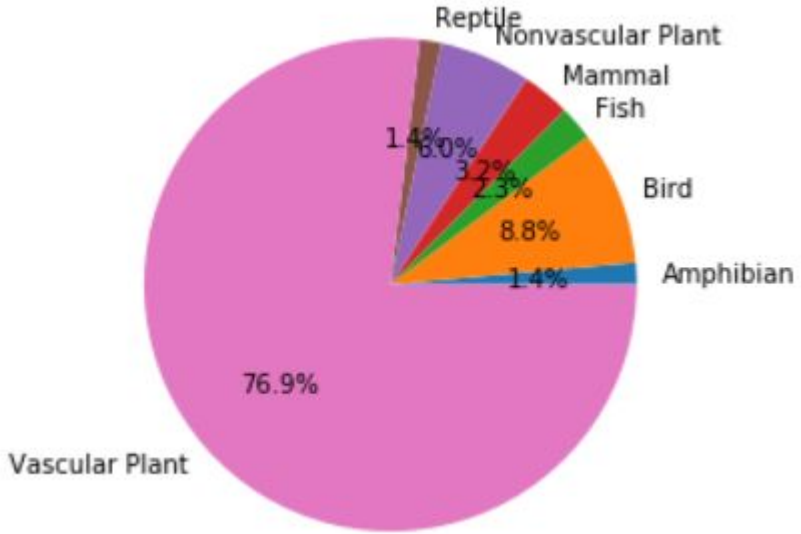
Only 4 are in recovery



Species Categorisation

Species are divided into the categories, in ascending order:

Reptiles, Amphibians, Fish, Mammals, Nonvascular Plants, Birds, Vascular Plants



Endangered species by category

category	not_protected	protected	percent_protected
Amphibian	72	7	0.088608
Bird	413	75	0.153689
Fish	115	11	0.087302
Mammal	146	30	0.170455
Nonvascular Plant	328	5	0.015015
Reptile	73	5	0.064103
Vascular Plant	4216	46	0.010793

Mammals appear to be most likely category to be endangered, with birds close behind, compared to Amphibians, Fish and Reptiles. Plants appear to be least likely to be endangered.

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Using a Chi-squared fit, Mammals are not more endangered than Birds at a statistically significant level (with a p-value of 0.688).

However they are more endangered than Reptiles at a level that is statistically significant (with a p-value of 0.038).

Recommendations for Endangered Species

Given that mammals have a statistically higher chance of being protected species than other categories like reptiles and plants, it would make sense to focus on future conservation efforts on mammals.

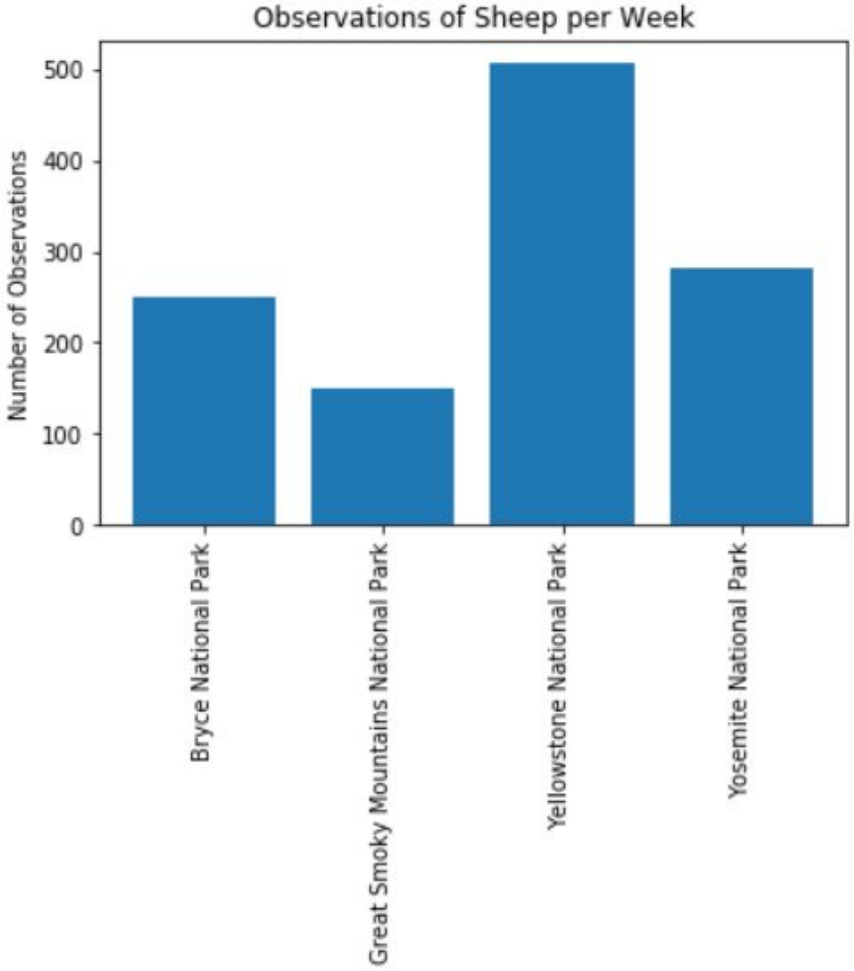
However it can not be inferred with enough statistical certainty that mammals are in more or less danger than amphibians, fish or birds so it may make sense to spread efforts on to those categories as well.

Foot & Mouth Study

Observations of sheep take place weekly at four national parks.

15% of sheep at Bryce National Park have Foot & Mouth disease.

A different program at Yellowstone aims to reduce the rate by at least 5%.



Foot & Mouth Study

This gives a baseline conversion rate of 15%, in which we want to observe a minimal detectable effect of 33.3%.

To observe this with a statistical significance of 90%, we'd need a sample size of 870 (using the sample size calculator).

Yellowstone observed 507 sheep in the weeks sample so we'd need two weeks of data taking to be able to distinguish such an effect.