Biodiversity in the National Parks

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Introduction

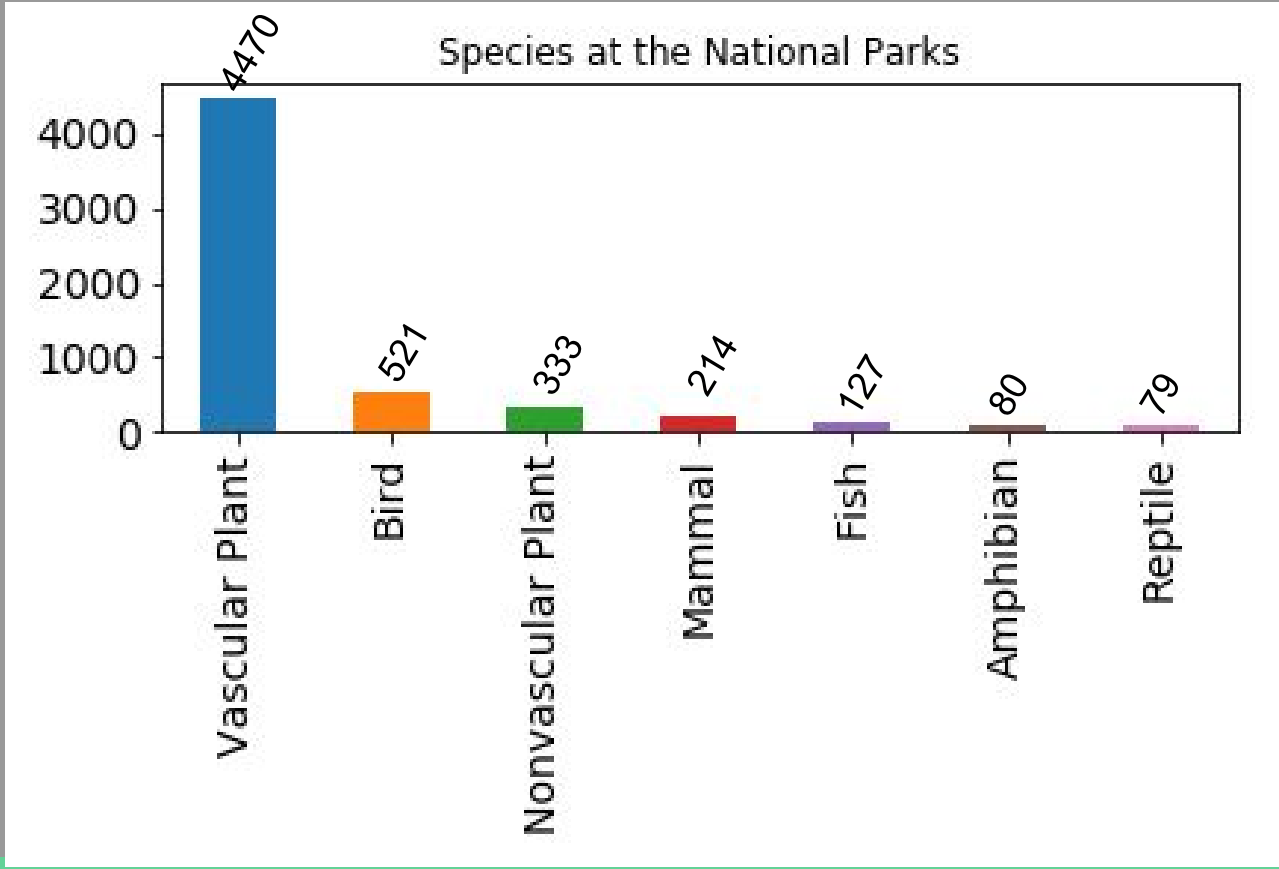
For this project, 2 data sets were available:

- ➔ Species
  - This dataset lists all the various species found at the National Parks and lists each species' category, their common name(s) and their conservation status.

- ➔ Observations
  - This dataset lists the number of times a variety of species were observed at 5 different national parks.

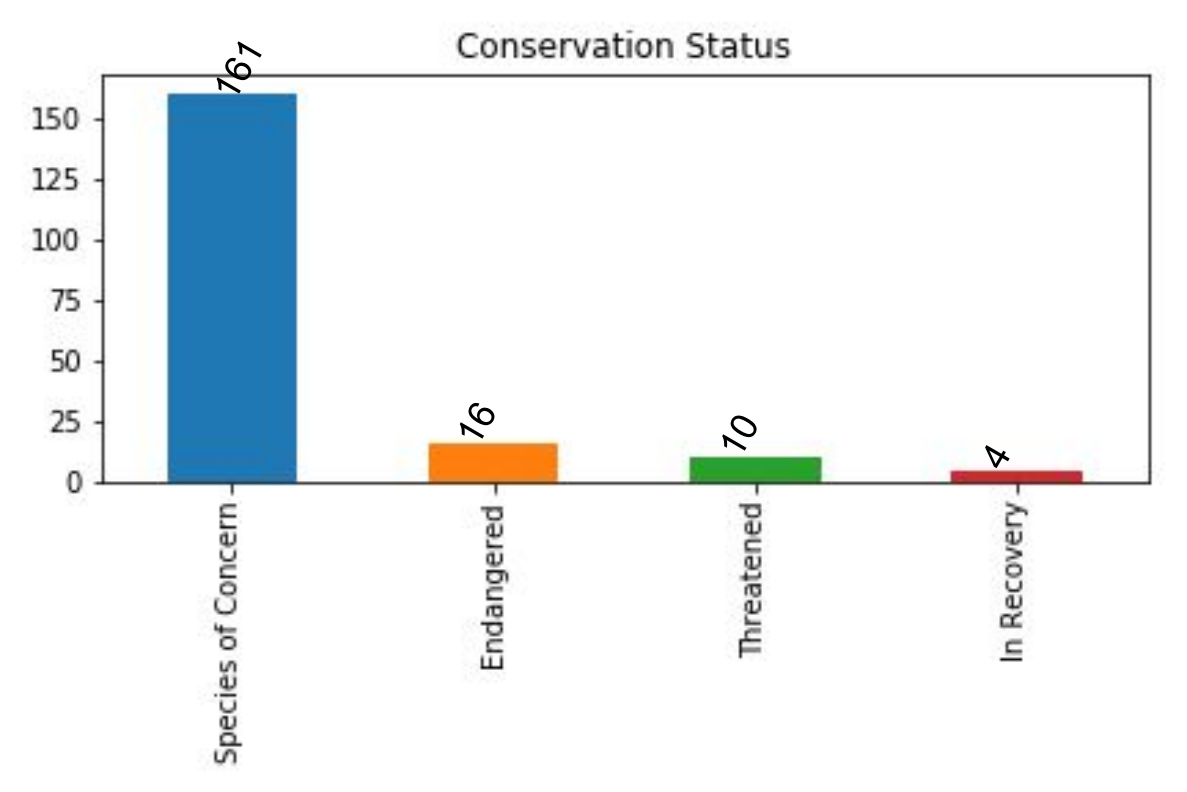
Let’s Explore!

Diversity Overview: 5,541 Unique Species



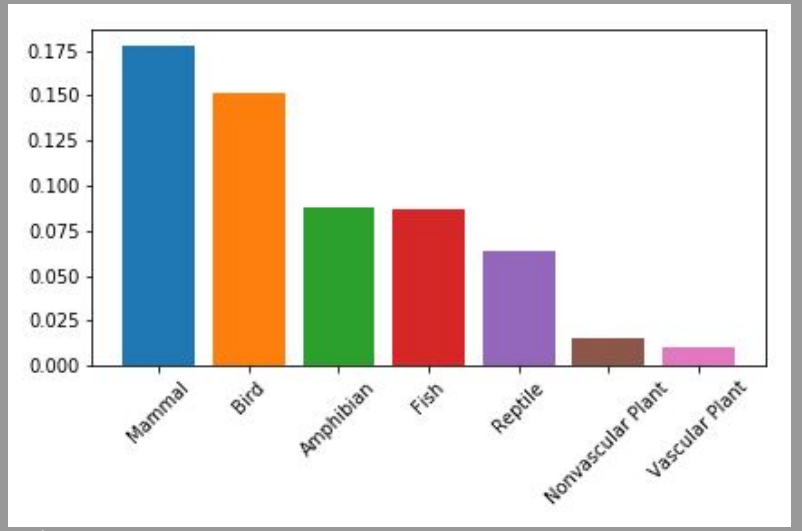
Conservation Status by Species

- ➔ 5,633 species are not currently under protection.
- ➔ 191 species are at risk.



Protection Status by Categories

- ➔ 17.76% of Mammals are under protection.
- ➔ 15.16% of Birds are under protection.
- ➔ 8.75% of Amphibians are under protection.
- ➔ 8.66% of Fish are under protection.
- ➔ 6.33% of Reptiles are under protection.
- ➔ 1.50% of Nonvascular Plants are under protection.
- ➔ 1.03% of Vascular Plants are under protection.



Likelihood of Being Endangered

Some species are more likely than others of being Endangered

- ➔ Mammals and Birds, for example, are not more likely to be endangered when compared against each other.
  - ◆ Pvalue = .45 - calculated with a Chi-Square Hypothesis Test

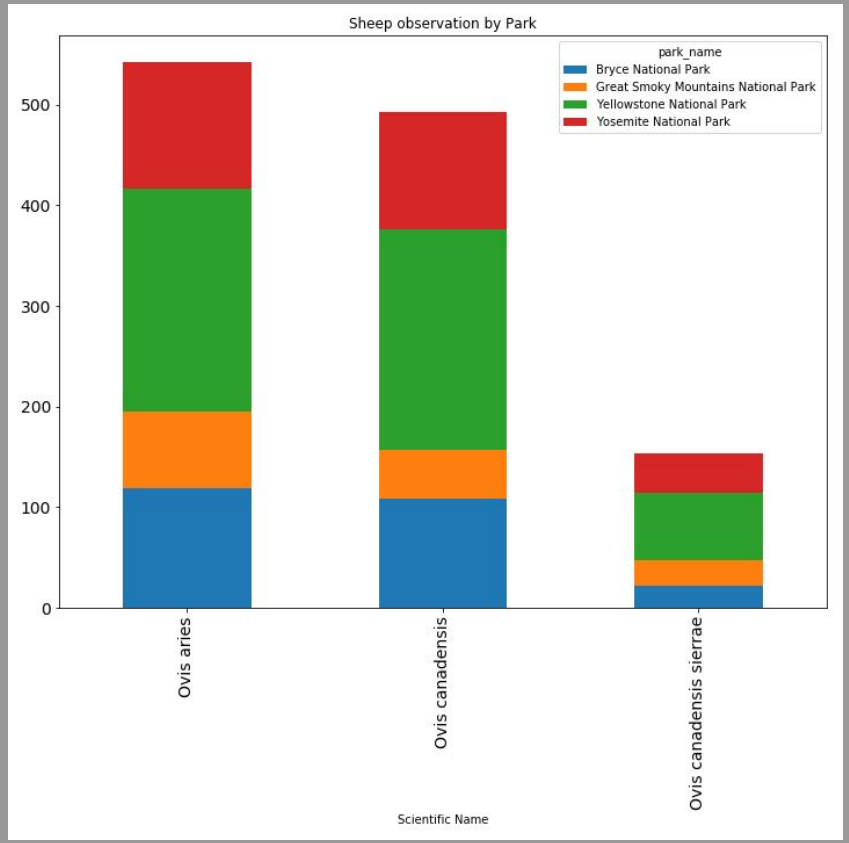
- ➔ Reptiles, on the other hand, are less likely to be endangered than Mammals.
  - ◆ Pvalue = .02 - calculated with a Chi-Square Hypothesis Test

Recommendations

1. Since there are some species that are more likely to be endangered than others, the National Park Service should identify which categories are more likely to be endangered and examine why this is so for those categories. If, for example, habitat destruction or human interference for a particular category of species is causing larger rates of endangerment then a policy can be implemented to better protect these habitats.
2. Mammals and Birds have the largest percentage of species at risk. These are usually the most popular animals visitors like to see. The National Park Service should educate visitors as to the risks faced by these animals and encourage visitors to help lessen the threats to these animals when possible.

And what about sheep you ask?

- ➔ There are **3** kinds of sheep found in the National Parks.
- ➔ Ovis aries, commonly known as Red Sheep, is seen most often followed by Bighorn Sheep (Ovis canadensis) and the Sierra Nevada Bighorn Sheep (Ovis canadensis sierrae).



Foot and Mouth Disease Study at Yellowstone

- 15% of sheep at Bryce National Park have foot and mouth disease.
- Park rangers at Yellowstone National Park are running a program to reduce the rate of foot and mouth disease within the park.
- In order to detect a 5% reduction in the disease by the program, a sample size of 510 is needed to test whether this program is effective.
  - This sample size was calculated with a 15% Baseline based on Bryce data, a 33.3% Minimum Detectable Effect and a 90% level of significant.
- Scientists at Yellowstone need 1 week to sample enough sheep to test their program. If scientists at Bryce would also like to test the efficacy of this program on their sheep population, it will take them 2 weeks to collect enough samples.

Recommendations

- ➔ If the foot and mouth disease reduction program is proven to reduce the occurrence of the disease by 5%, Yellowstone scientists should consider expanding the program to other parks.
- ➔ If the program is not effective, a new solution will need to be found to reduce the occurrence of foot and mouth disease.

Thank you! Enjoy the National Parks!