Biodiversity for the National Parks

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Exploring species-info.csv

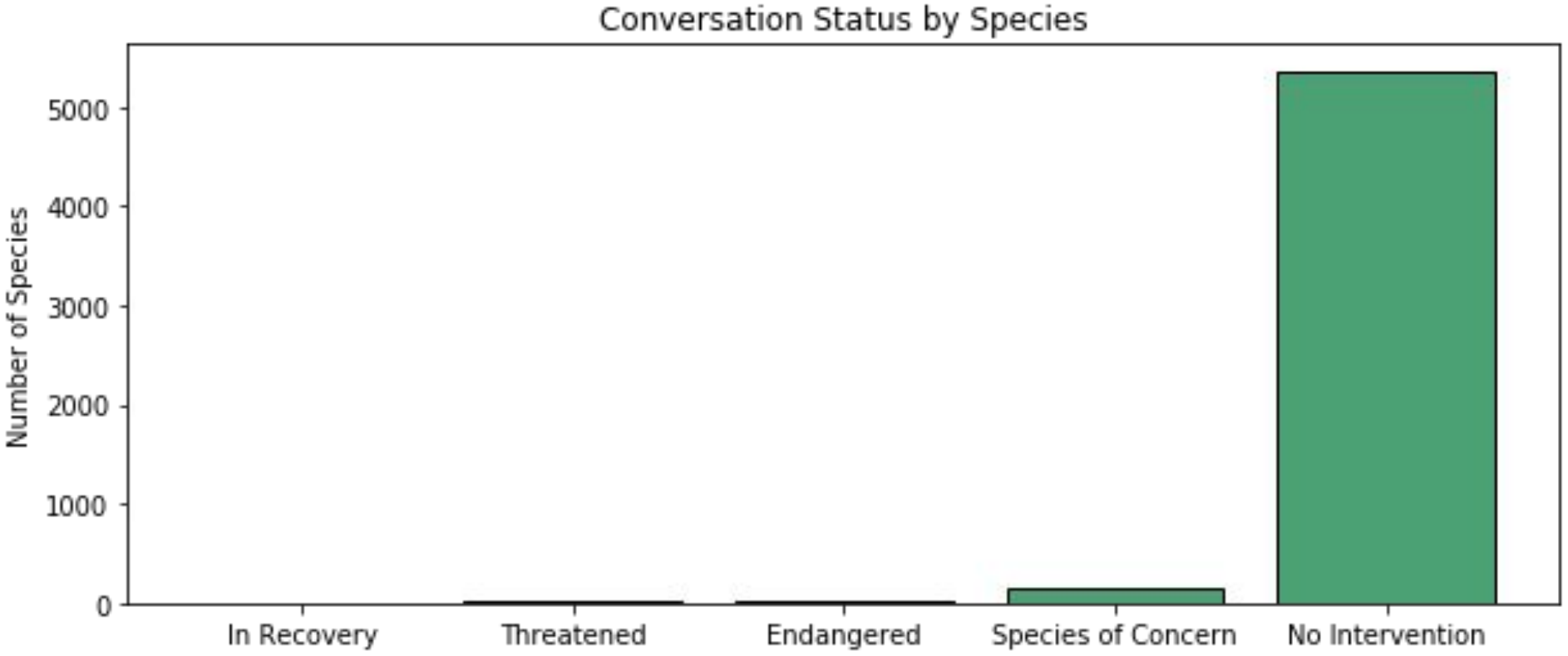
Overview of Species Data

- There are 5,541 unique plant and animal species included in the data.
- Vascular plants make up the vast majority, accounting for 4,262 unique species.
- There are a total of 946 unique animal species, slightly more than half of which are birds (488).

Conservation Status

- Each species falls into one of the five Conservation Status categories shown in the table.
- Thankfully, most species fall under the No Intervention category.

Conservation Status	Number of Species
No Intervention	5,363
Species of Concern	151
In Recovery	4
Threatened	10
Endangered	15


Conversation Status by Species
Number of Species
5000
4000
3000
2000
1000
0
In Recovery
Threatened
Endangered
Species of Concern
No Intervention

Significance Calculations

Conservation Status by Category

- Mammal species appear to be the most likely to need protection.
- But are they significantly more likely to need protection than other categories?

Category	Non-Protected Species	Protected Species	Percent Protected
Amphibian	72	7	8.86%
Bird	413	75	15.37%
Fish	115	11	8.73%
Mammal	146	30	17.04%
Reptile	73	5	6.41%
Non-Vascular Plant	328	5	1.50%
Vascular Plant	4,216	46	1.08%

Significance Calculations and Recommendation

- Based on the table in the previous slide, Mammals (17.04%) and Birds (15.37%) had the highest percentage of species that were protected.
  - A Chi Square test determined that the difference between the Protected/Not-Protected status of Mammals versus Birds was **not significant**.
  - With a **p-value returned of 0.686**, the difference can likely be attributed to random chance.
- Of the animal categories, Reptiles had the lowest percentage of species considered protected (6.41%).
  - Another Chi Square test was performed comparing Animals to Reptiles, which showed that t**here is significant difference** between the two categories.
  - We can confidently state that difference is not due to chance because of a **p-value of 0.038**.

Recommendations

- There should be roughly equal conservation efforts made to protect both Mammals and Birds, given that they are the categories with the highest percentages of protected species, and that there is no significant difference between the protected percentages of the two categories.
- While protecting all species is important, Reptiles should receive less attention than both Birds and Animals.

Reducing Foot and Mouth Disease in Sheep

Determining Sample Size

- The Baseline Conversion Rate is 15%
  - this represents the current percentage of sheep in Bryce National Park known to have foot and mouth disease.
- Minimum Detectable Effect is 33.33%
  - This represents the goal of reducing the percentage of sheep with foot and mouth disease to 10%, being able to confidently attribute the drop to the program in place and not chance.
- Significance is 90%
- **Based on the above inputs, the sample size of sheep that would need to be observed is 870.**

Length of Study for Sample Size of 870

- Observations in Bryce National Park would need to last for about **3.5 weeks**.
- Observations in Yellowstone National Park would need to last for only about **1.7 weeks**.