Investigating Protected Species

Brought to you by:
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Section 1: Overview of species

Data Analysis was performed to create an overview of the species found in the National Parks

5,541

Number of unique species found in our National Parks

Our species are categorized into the following types:

Mammal

Bird

Reptile

Fish

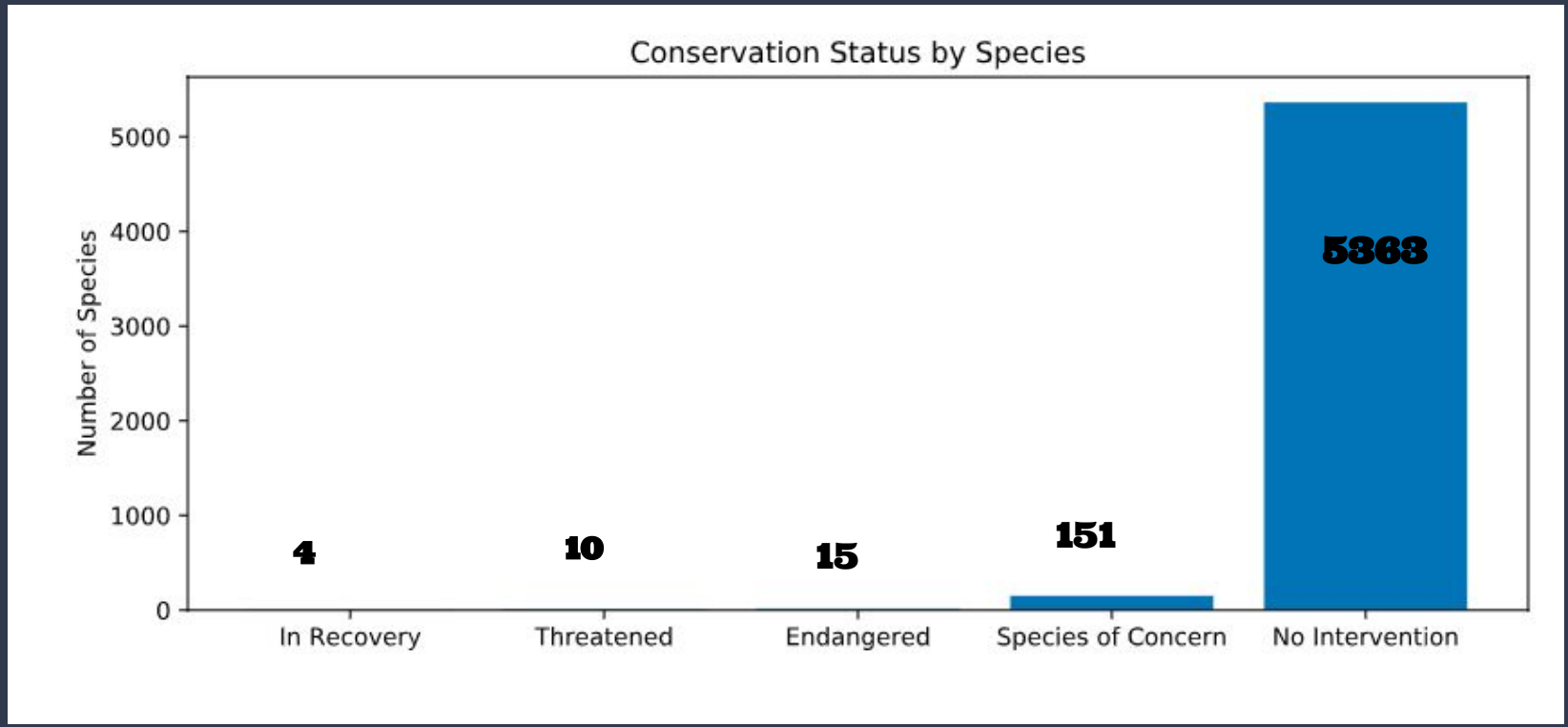
Amphibian

Vascular Plant

Non-Vascular Plant

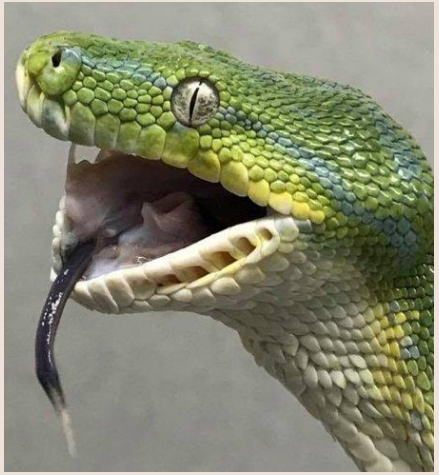
Section 2: Conservation Status

Analysis of the conservation status of our species



It was found that 5363 species don't need intervention. However, there are 151 species of concern, 15 Endangered and 10 threatened. 4 species are in recovery.

Are certain types of species more likely to be endangered?



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

- In order to answer the previous question the value **percent_protected** was calculated. The value is equal to the number of species that are ***protected / not protected*.**
- It was found that Mammals are more likely to be endangered than Birds

Mammals are more likely to be endangered than birds, but is this difference significant?

0.6875

A chi-squared test was performed in order to test if the difference between mammals and birds was significant. The **p-value** was 0.6875, well above the 0.05 standard value. Which means the difference **isn’t significant** and our difference was **due to chance**.

What about other species is their difference due to chance too?

0.0383

A chi-squared test was performed in order to test if the difference between mammals and reptiles was significant. The p-value was 0.0383 which means the difference is significant!

Are certain types of species more likely to be endangered?

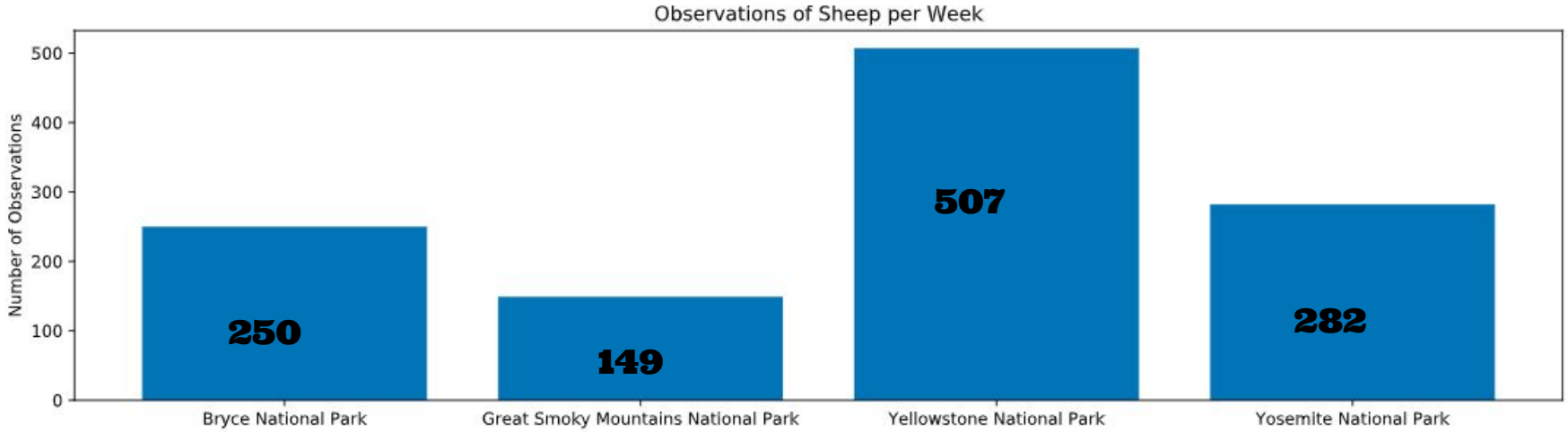
Based on the chi-squared test results we can conclude that certain species are **more likely to be endangered.**

Section 3: Sheep Sightings

Analysis of observation of Sheep in National Parks.

Study :Scientist tracked various species of sheep across the National Parks

RESULTS



Yellowstone National Park has the greatest sightings of sheep.

Section 4: Foot and Mouth Reduction Effort

Yellowstone Park Rangers have been running a program to reduce foot and mouth disease. A study was performed to detect if the program is working.

Scientist want a >5% reduction in the disease
If they wanted to test if the reduction is significant...

- Scientist would have to observe at least 870 sheep

- To see that many sheep would take approximately 1 week in Yellowstone and approximately 2 weeks in Bryce National Park

Conclusion

Using Data Analysis Tools such as Matplotlib, Pandas, Python, Pivot Tables, Chi-Squared Test and Sample Size Determination, the following can be concluded.

- There is a total of **5541 species** in the National Parks including Birds, Mammals, Reptiles, Amphibians, Fish, Vascular and Nonvascular Plants.
- **5363 species need no intervention** and the rest of the species are endangered, cause of concern, threatened or recovering
- Through chi-squared tests it was concluded that **certain species are more likely to be endangered** than others
- It was found that **Yellowstone National Park has more sheep sightings** than any other park
- In order to test if the foot and mouth disease reduction effort is working **approximately 870 sheep should be observed,** which would take approximately **one week at Yellowstone** Park and **2 weeks at Bryce National Park**