

Biodiversity for National Parks

Codecademy presentation
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Objective

The National Park Service needs to analyze the conservation status of potential endangered species from a multitude of national parks.

The objective is to discover and analyze specific patterns as they relate to endangered species.

Species Observations

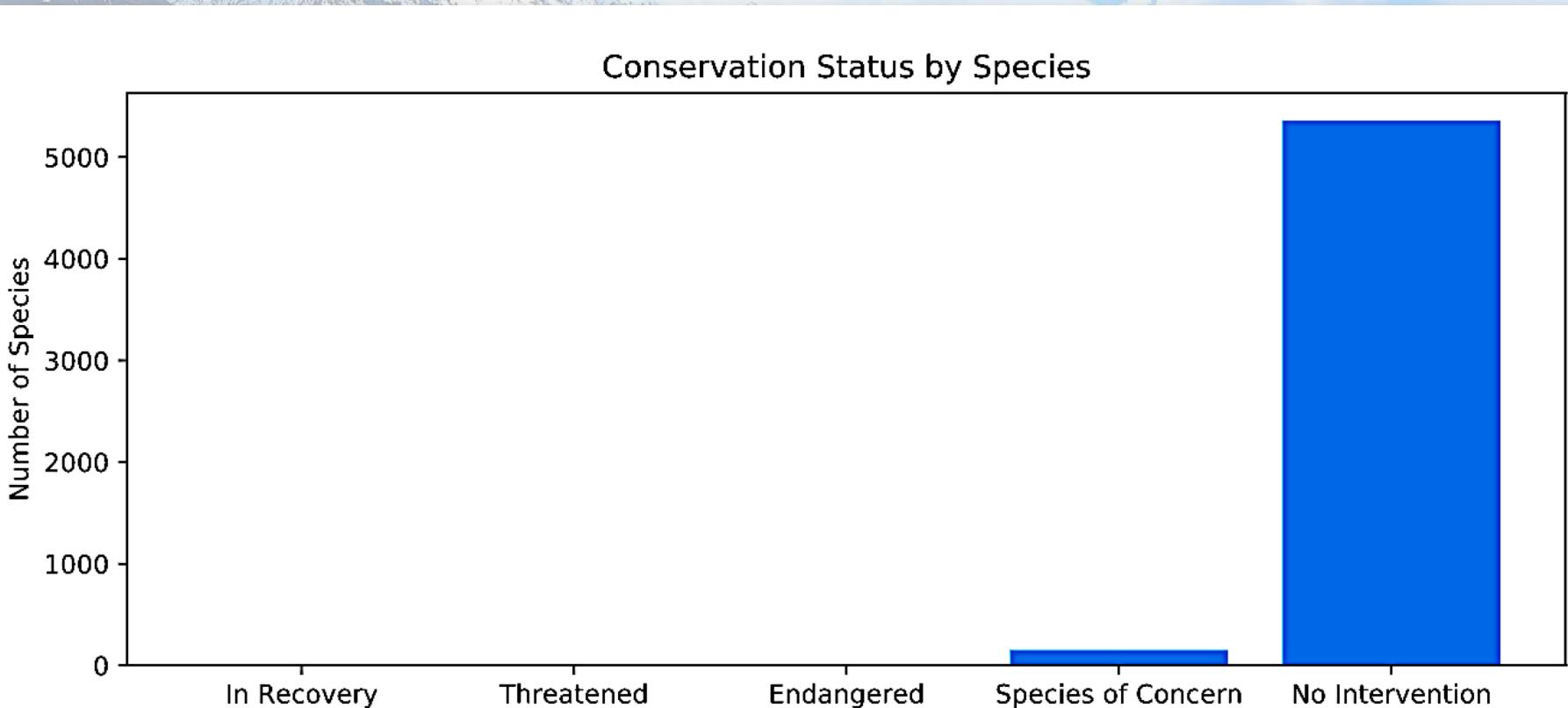
What we know

- There are 5541 Species Total
 - 15 endangered species
 - 4 species in recovery
 - 151 of concern
 - 10 species are threatened
 - However, 5363 have been labelled with no intervention

Species Categories

- Mammal
- Bird
- Reptile
- Amphibian
- Fish
- Vascular Plant
- Nonvascular Plan

Observation of Species cont.



Species Protection Observation

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



Are certain types of species more likely to be endangered? Taking a closer look...

Category	Protected	Not Protected
Bird	75	413
Mammal	30	146
Reptile	5	73

When conducting a Chi-Squared Test it was found that...

Category Comparison	P-Value
Bird vs. Mammal	0.68
Reptile vs. Mammal	0.038

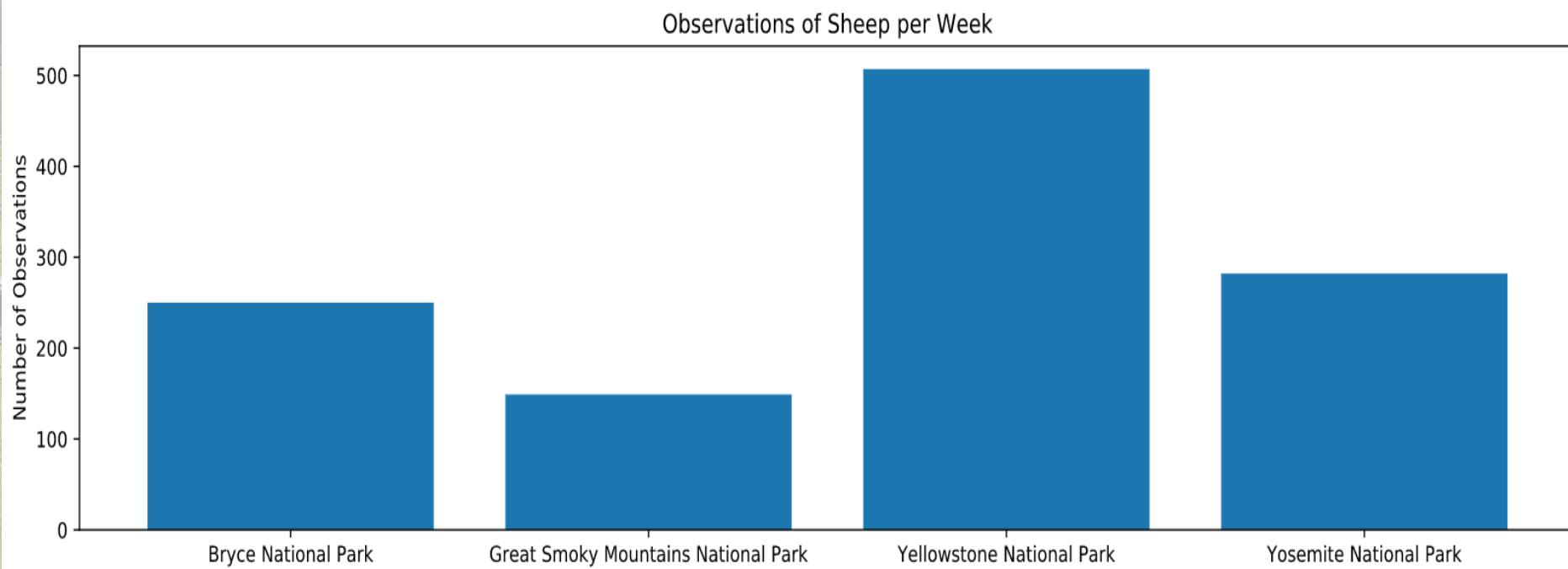
- Birds and Mammals had different protection percentage, however, their difference was not significant based on the p-value.
- But Reptiles and Mammals had different protection percentage, and their difference was significant based on the p-value that was $< .05$.

Recommendations

- Based on the results, it is shown that some species are more likely to become endangered versus others.
- This means that the National Parks Service can conduct further analysis to find these species and place them into protective categories before they are threatened.

Investigating Protected Species: A Sheep Case Study

Conservationists are studying Foot and Mouth disease at multiple national parks. The objective is to observe in the shortest time how many sheep have the disease. Below is a graph of sheep per week that Park Rangers sampled at four national parks.



Sheep Observation Continued

As shown, Yellowstone National Park has the most sheep observed per week with a total of 507.

park_name	observations
Bryce National Park	250
Great Smoky Mountains National Park	149
Yellowstone National Park	507
Yosemite National Park	282

Sheep Observation cont.

In 2017, 15% of sheep at Bryce National Park had Foot and Mouth disease.



Using 15% as a baseline from Bryce National Park, and a minimum detectable effect of 5% with at least a 90% significance level it is determined that the minimum sample size to observe is 510 sheep.

Results & Recommendation

- To observe 510 sheep, the Yellowstone National Park observation period is estimated to take one week.
- Bryce National Park's estimated observation period is two weeks.
- It is recommended, due to time constraints and dangers of the Foot and Mouth disease to observe the sheep at Yellowstone for a quicker program analysis.

A wide-angle photograph of a mountainous landscape. In the background, majestic snow-capped peaks rise against a bright blue sky filled with fluffy white clouds. The middle ground shows rolling green hills. In the foreground, a large herd of goats of various colors (black, brown, white) are grazing on a grassy field. A small, light-colored path or road cuts through the grass between the hills.

Thank you!