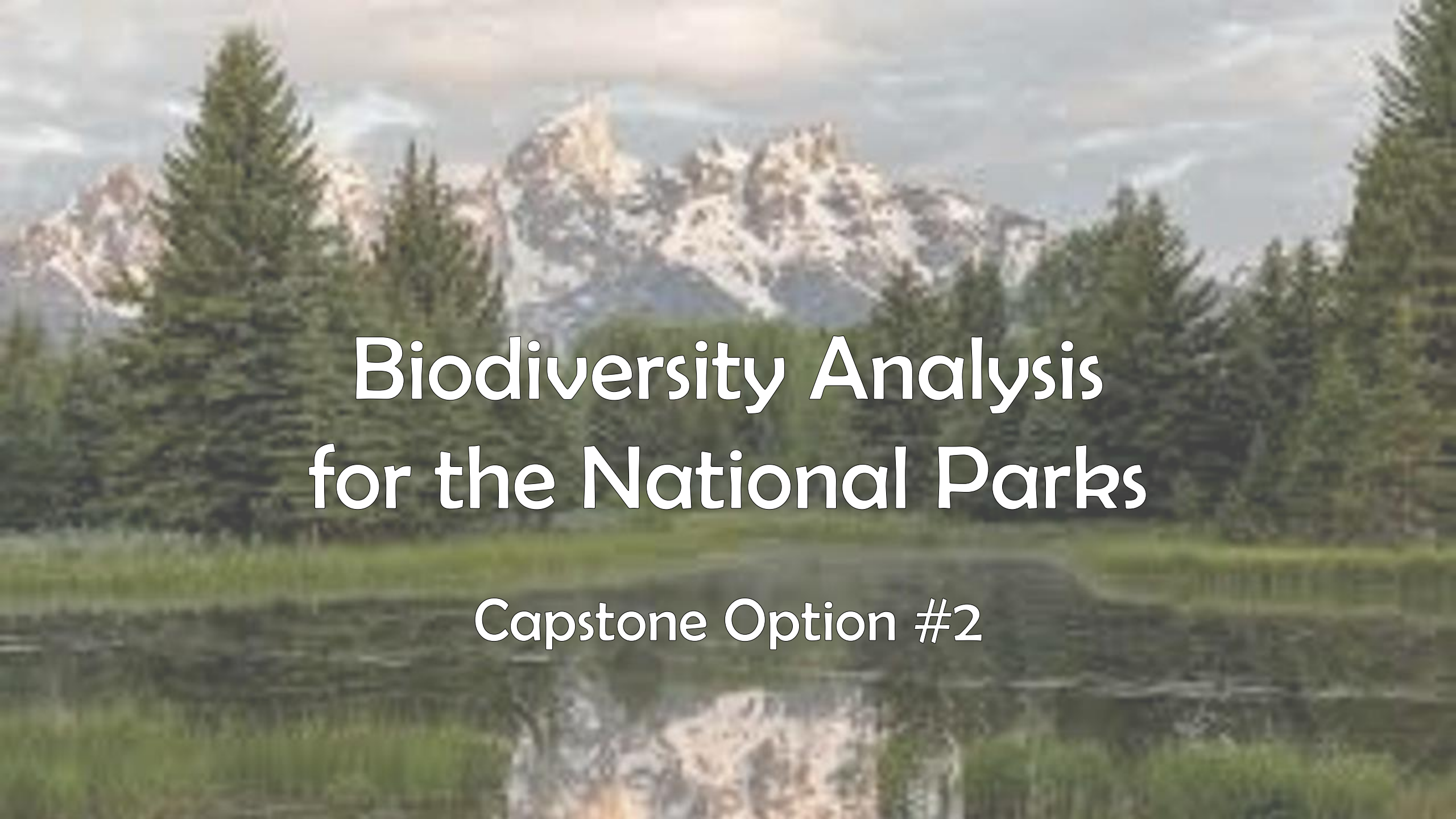


Biodiversity Analysis for the National Parks

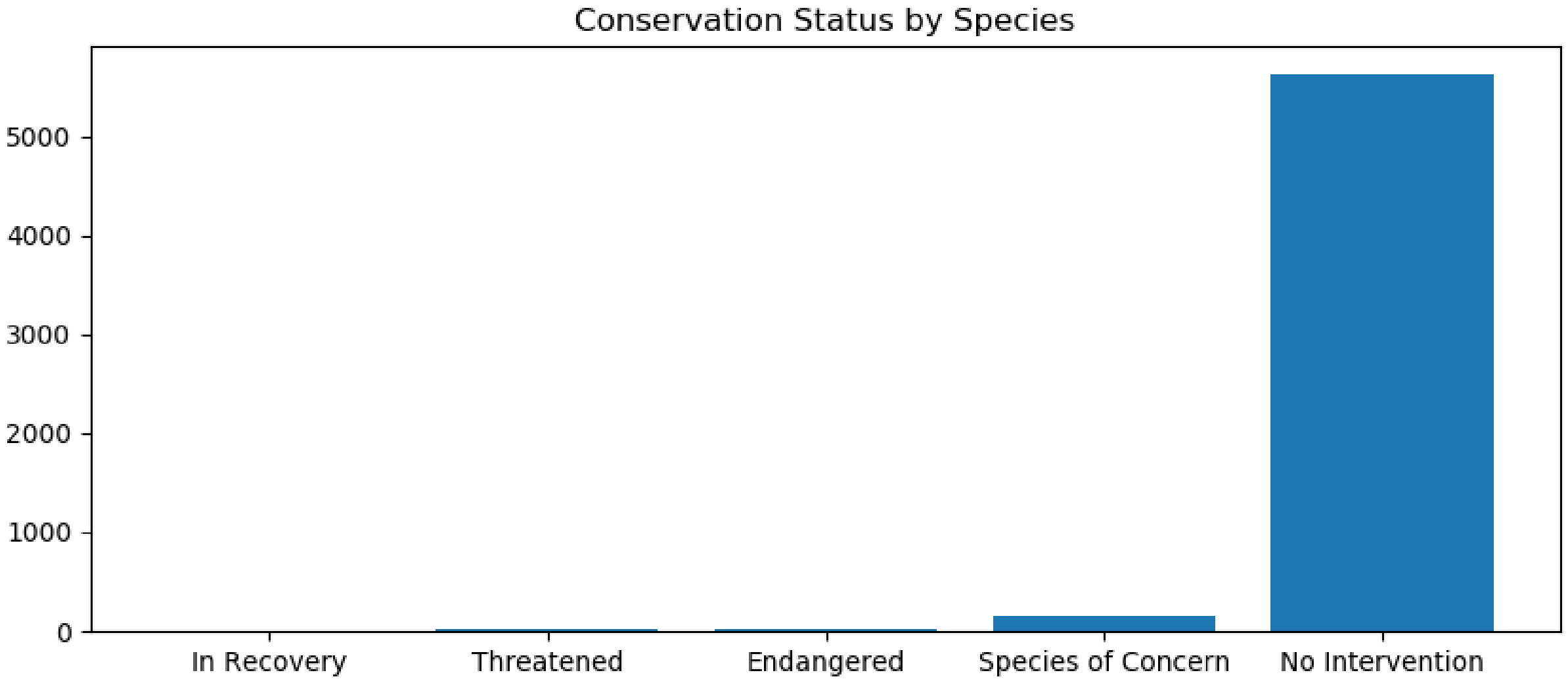
Capstone Option #2

Species Observations

Superficial observations made from looking at the data of different species found in our National Parks

- 5,541 different species were observed inhabiting the National Parks
- 3.25% of these species are at least a species of concern
- 8.33% of the observed species that are at least a species of concern, are endangered.
- 180 of the observed species, in total, are at least a species of concern.

Conservation Status	# of Species
In Recovery	4
Threatened	10
Endangered	15
Species of Concern	151
No Intervention	5363


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

- 17.05% of observed mammals are protected
- Only 1.08% of vascular plants are under a protected status.
- Vascular plants comprise 78.61% of the observed not protected species population.
- Birds make up 41.90% of the observed protected species population.
- Reptiles and nonvascular plants each only represent 2.79% of the observed protected species population.
- Amphibians only comprise 1.34% of the observed not protected population.

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

Significance Testing

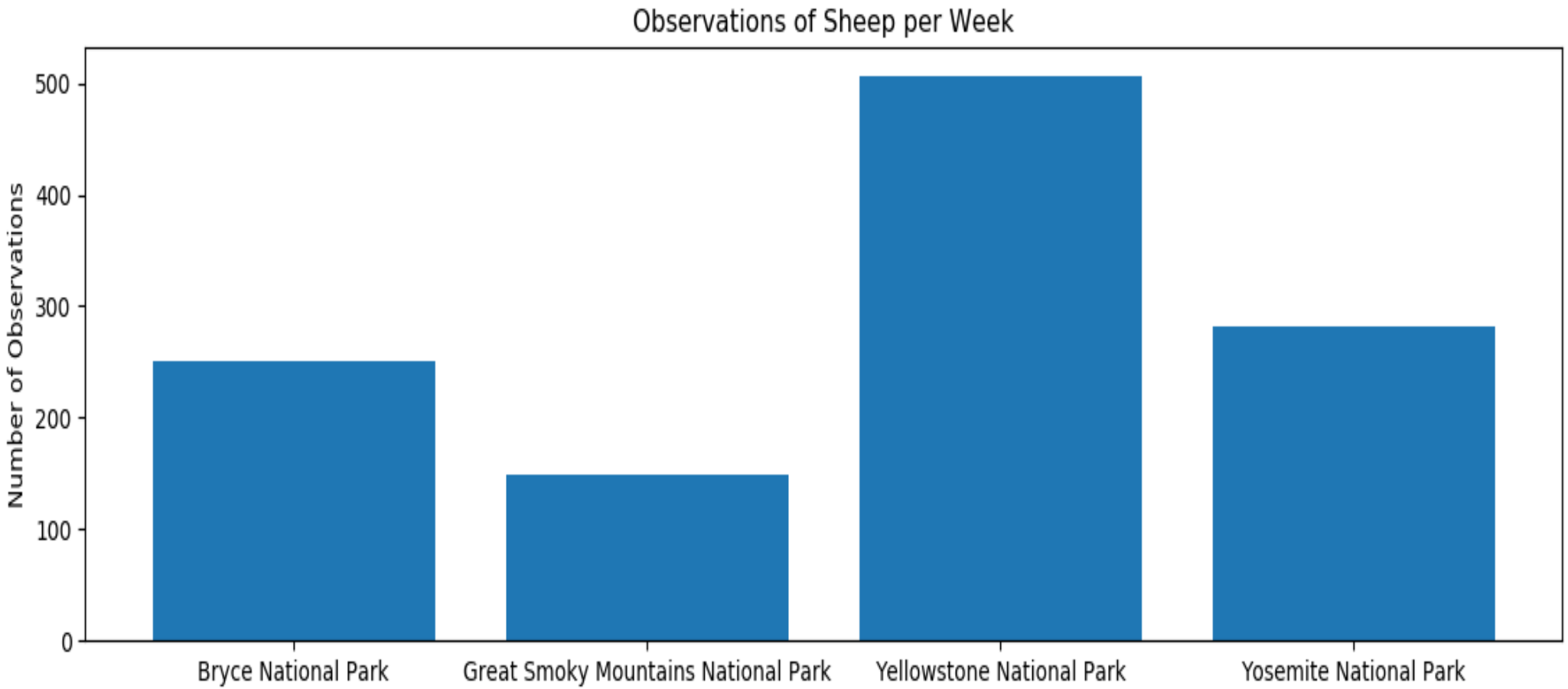
Chi-squared Contingency Results

- 2 chi-squared contingency tests were conducted using the information in the table.
- The tests examined whether or not there was a significant differences between the mammal and bird sample populations, and the mammal and reptile sample populations.
- With a p-value of 0.6876, the null hypothesis cannot be rejected; thus there is not a significant difference between the mammal and bird populations, at the 95% confidence interval-level.
- With a p-value of 0.0384, the null hypothesis is rejected; thus there is a significant difference between the mammal and reptile populations, at the 95% confidence interval-level.

Recommendation

- Conclusively, mammals are more likely to be endangered compared to reptiles!
- Hence, conservationists should focus more resources on tending to the mammal population than the reptile population.
- Since there is no significant difference between the mammal and bird populations, there is no reason to prioritize one population over the other based on their endangerment rates.

Sheep Observations


Observations of Sheep per Week
Number of Observations
0
100
200
300
400
500
Bryce National Park
Great Smoky Mountains National Park
Yellowstone National Park
Yosemite National Park

Sheep Observations Needed for Foot and Mouth Disease Study

- Using the information that 15% of sheep at Bryce National Park have foot and mouth disease, and that we are wanting to detect a difference of 5 percentage points, we can determine that the minimum detectable effect we are wanting is 33.33% (which equals 100 x 0.05 / 0.15).
- Using Codecademy's Sample Size Calculator, the sample size needed to observe to perform the analysis is 870.
- Therefore, it would take about 1.72 weeks to observe the necessary number of sheep at Yellowstone Park in order to assess the sheep foot and mouth disease program.

End