Biodiversity for the National Parks

Analysis by Conor O’Brien

Species Data

- Dataframe included information on Category, Scientific Name, Common Name, and it's Conservation Status (fig.1)
- Total Species: 5,541
- 7 different categories: Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant, Nonvascular Plant
- 4 different statuses of conservation: Species of Concern, Endangered, Threatened, In Recovery. Species that did not fall into one of these categories were given a null value
- Of 5,541 total species, only 180 fell into a conversion status other than null (fig. 1)

	conservation_status	scientific_name
0	Endangered	15
1	In Recovery	4
2	Species of Concern	151
3	Threatened	10

Endangered Status between Species

- When viewed by category: Mammals had the most protected members, with almost 18% of that family receiving some kind of conservation status

- Closely behind Mammals was Birds at 15.1%. The difference between the two could not be determined “significant” based on testing, so gap could be the result of chance / sampling

- However, when the same test was ran between Mammals and the less protected Reptiles, the difference was significant

category	not_protected	protected	percent_protected
Amphibian	73	7	0.087500
Bird	442	79	0.151631
Fish	116	11	0.086614
Mammal	176	38	0.177570
Nonvascular Plant	328	5	0.015015
Reptile	74	5	0.063291
Vascular Plant	4424	46	0.010291

Recommendation

- Of the over 5,500 species identified in the study, only 3% fall into any sort of significant conservation status.

- However, based on the calculations performed in this study, there are two categories that should be examined for extra attention / protection:
  - **Mammals** – 17.7% of category is protected
  - **Birds** – 15.2% of category is protected

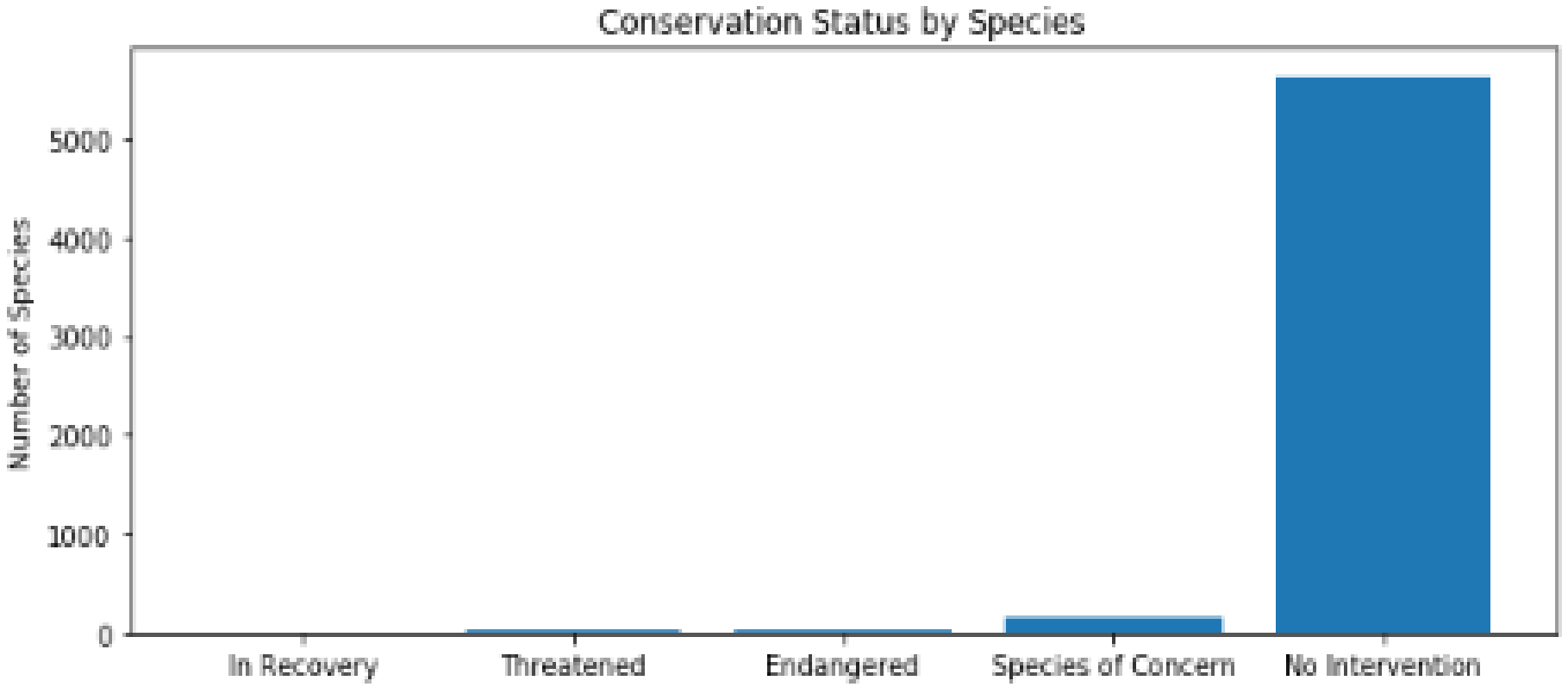
- My recommendation is that conservationists should put more attention and resources towards these two categories to make sure these percentages decrease / do not increase

Sample Size Determination for Foot and Mouth Disease Study

- Park rangers at Yellowstone National Park are running a program to reduce “Foot and Mouth Disease” in sheep (fig. 2)
- Based on prior observations in Bryce National Park, 15% of sheep were determined to have the disease. This was used as a baseline for the Yellowstone study
- It was determined that in order to be confident in a 5% drop in the disease, 890 sheep would need to be sampled
- Based on park observations, this would take under 2 weeks in Yellowstone, while taking almost 4 weeks at Bryce

	park_name	observations
0	Bryce National Park	250
1	Great Smoky Mountains National Park	149
2	Yellowstone National Park	507
3	Yosemite National Park	282

Appendix 1.1



- Figure 1

Appendix 1.2

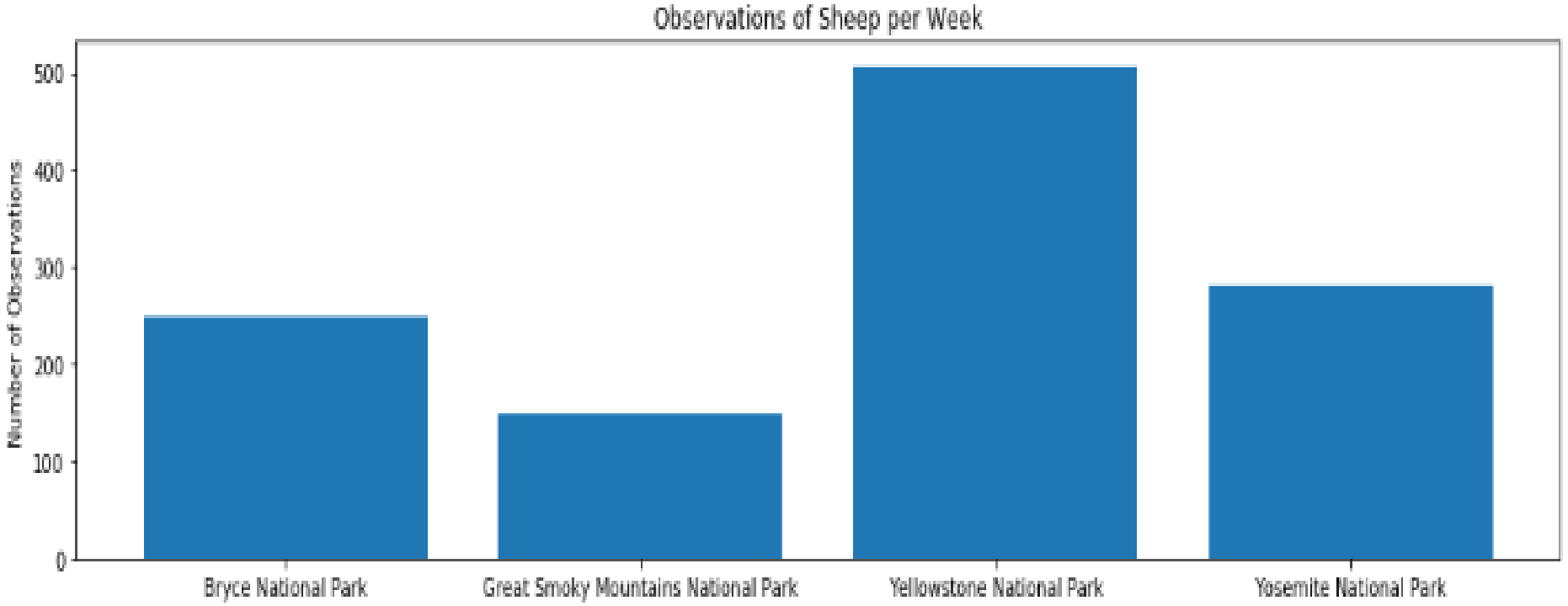


Figure 2