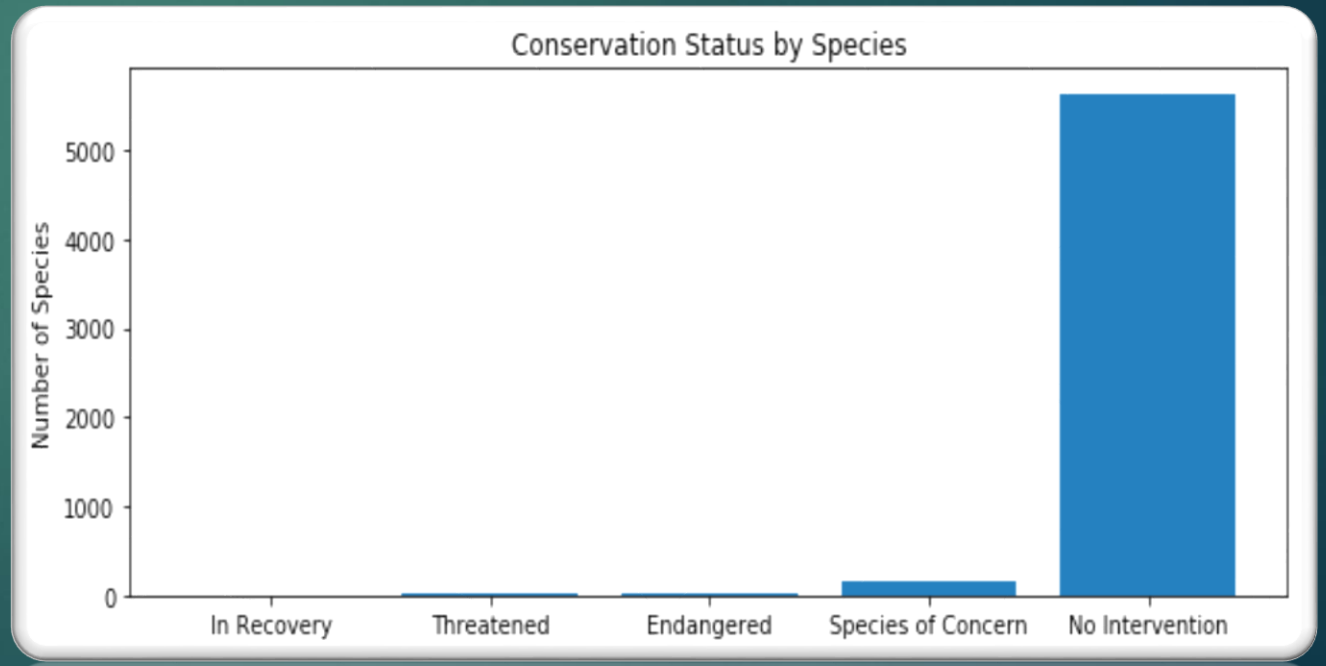
Data Analysis of Biodiversity in National Parks

ANNA DOUVILLE

5/31/2018

Species Data

- The species data contained information about 5541 different species from various national parks which included Mammals, Birds, Reptiles, Amphibians, Fish, Vascular Plants, and Nonvascular Plants.
- These species were categorized based on their conservation status:
  - No Intervention (5363)
  - Species of Concern (151)
  - Endangered (15)
  - Threatened (10)
  - In Recovery (4)



Likelihood of Species Endangerment

- Mammals and Birds have the highest risk of endangerment
  - A chi-square test revealed that there is no significant difference between the percent endangerment of Mammals and that of Birds ($p = .69$)
  - A second chi-square test revealed that Mammals have a significantly higher risk of endangerment than that of Reptiles ($p = .04$)
- Plants have the lowest risk of endangerment

Percent of species that are protected for each category:

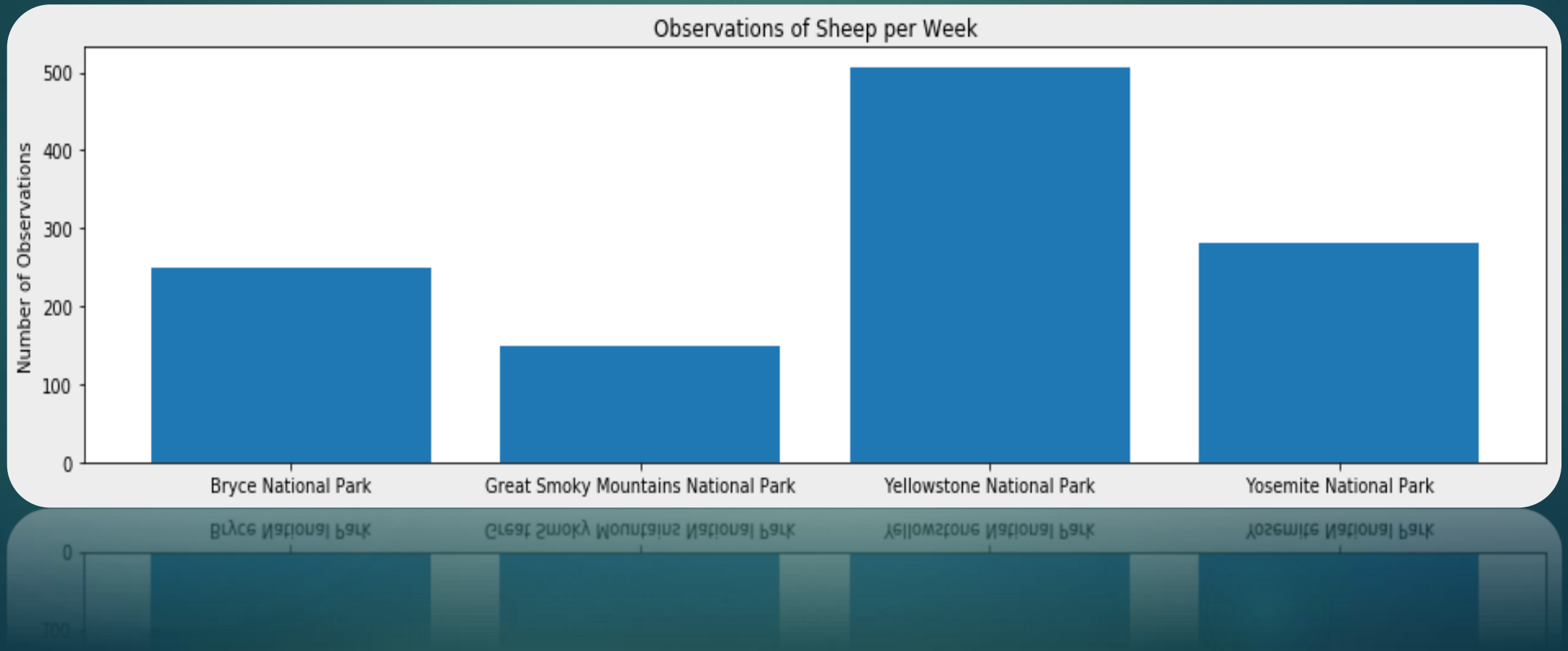
Category	Percent Protected
Amphibian	9%
Bird	15%
Fish	9%
Mammal	17%
Nonvascular Plant	2%
Reptile	6%
Vascular Plant	1%

Recommendation for Conservationists

- Because Mammals and Birds have the highest risk of endangerment, it is recommended to focus on the protection of the Mammal and Bird species.

Foot and Mouth Disease Study

- Scientists have been observing Red Sheep, Bighorn Sheep, and Sierra Nevada Bighorn Sheep throughout various national parks



Foot and Mouth Disease Study

- 15% of sheep at Bryce National Park have foot and mouth disease.
- In order to determine if the program to reduce the rate of foot and mouth disease at Yellowstone National park has been working, there has to be a 5% minimum reduction of the disease.
- With a baseline of 15%, a minimum detectable effect of 33%, and a significance level of 90%, the proper sample size for the foot and mouth disease study would be 520 observations per park.
- Based on the current number of sheep observations per week, it would take approximately 2 weeks to collect enough observations at Bryce National Park and approximately 1 week to collect enough observations at Yellowstone National Park for the study.