BIODIVERSITY WITHIN THE NATIONAL PARKS

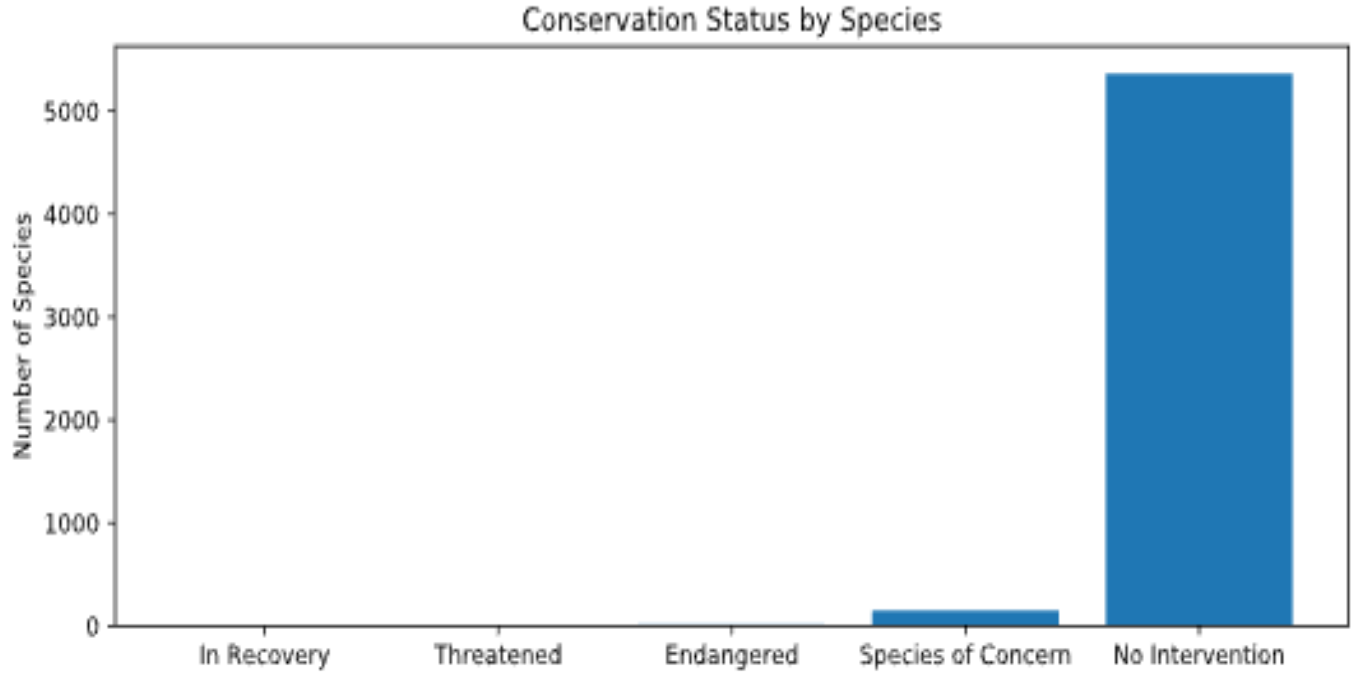
A look at the various species across multiple national parks in the United States.

WHAT DATA DO WE HAVE? (PART 1)

- A database of categorized data for various different species were analyzed. (species_info.csv)
- 5541 unique species were identified in the database.
- 7 species types: Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant, & Nonvascular Plant
- The database lists the scientific name, the common name, and the conservation status of that species.
- The conservation status were listed as either nan (No Intervention), Species of Concern, Endangered, Threatened, & In Recovery

WHAT DATA DO WE HAVE? (PART 2)

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



ENDANGERED STATUS AND SPECIES CATEGORY CORRELATION

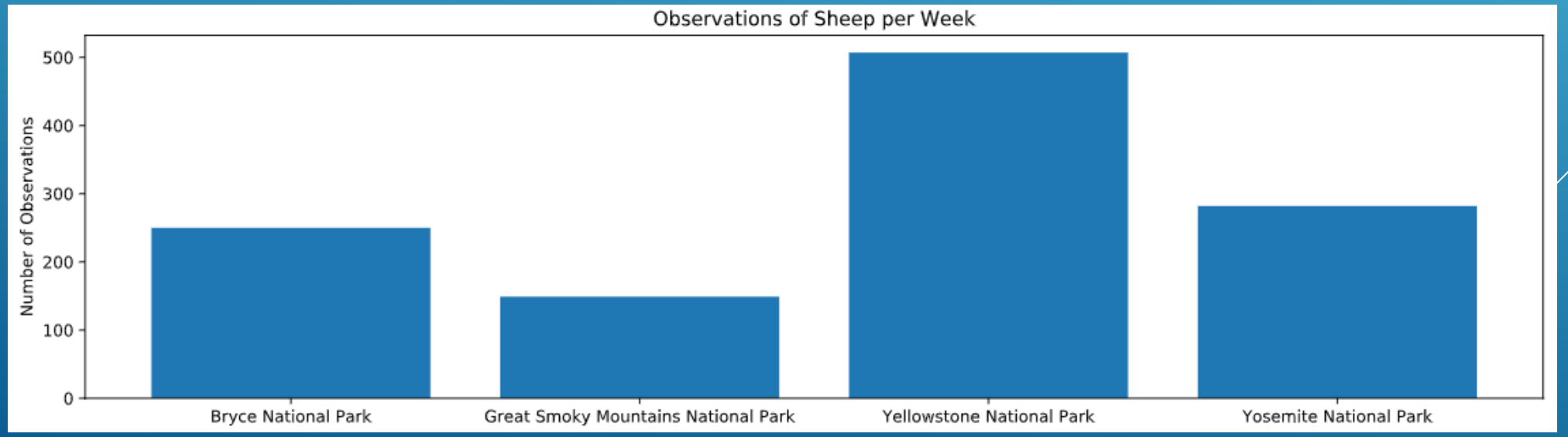
- We wanted to find out if certain species types are more likely to be endangered than another type.
  - We see that for mammals there are 30 species that are protected and 146 not-protected giving a protection rate of 17%.
  - We see that for birds there are 75 species that are protected and 413 not-protected giving a protection rate of 15%
- Are mammals more likely to be endangered than birds?
  - According to our chi-squared test the pval is 0.688, there is no significance in the protection rate difference and the observation is just by chance.

ENDANGERED STATUS AND SPECIES CATEGORY CORRELATION

- Similarly we looked at the difference between reptiles and mammals
  - Reptiles have 73 protected species and 5 not-protected giving a protection rate of 6%
  - Chi-squared test with a pval of .038 tells us that there is a significance between the two species types and that it is not due to chance.
- Recommendation
  - More observation and research should be done to look at why there is a significant difference between reptile and mammal conservation status.
    - Food chain or symbiotic issues
    - Environmental contribution
    - Hunting and other problematic human contribution
    - What can we do to fix it

SPECIES OBSERVATION DATA

- Conservationists have recorded sightings of different species at several national parks for the past 7 days.
  - Another data set was analyzed (observations.csv)
- Analyzed data related to sheep are shown here.



FOOT & MOUTH DISEASE REDUCTION EFFORTS

- Yellowstone National Park rangers have been running a program to reduce foot and mouth disease.
- How to check if this program is working?
  - Given:
    - Want at least a 5 percentage point reduction
    - Bryce National Park recorded 15% of sheep had disease (baseline)
    - Statistical significance of 90%
  - Calculations:
    - Sample size needed for significant reduction is 870 observations, based on sample size calculator with the above data entered.
    - Yellowstone National Park will need an estimated 1.7 weeks to observe this many sheep.
    - Bryce National park will need an estimated 3.5 weeks to observe this many sheep.

National Park	Observations
Bryce	250
Yellowstone	507