Biodiversity for the National Parks

Analysis and Recommendation

Species File Notes

- Contains 5825 rows
- Contains 5541 unique scientific names leaving 284 duplicates (not sure why there are duplicates but scientific name seems most unique so will assume each unique is a different species)
- These species are split among 7 categories: Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant, and Nonvascular Plant
- There are one or more common names listed in the common name field
- There are 5 possible values in the conservation status column: Species of Concern, Endangered, Threatened, In Recovery and a null/empty value
- The null values were explained to represent "No Intervention" (meaning no need for protection
- A Count of each conservation status of all species reveals the following: Endangered - 15, In Recovery - 4, No Intervention - 5363, Species of Concern - 151, and Threatened - 10 (see graph below)

Conservation Status of Species
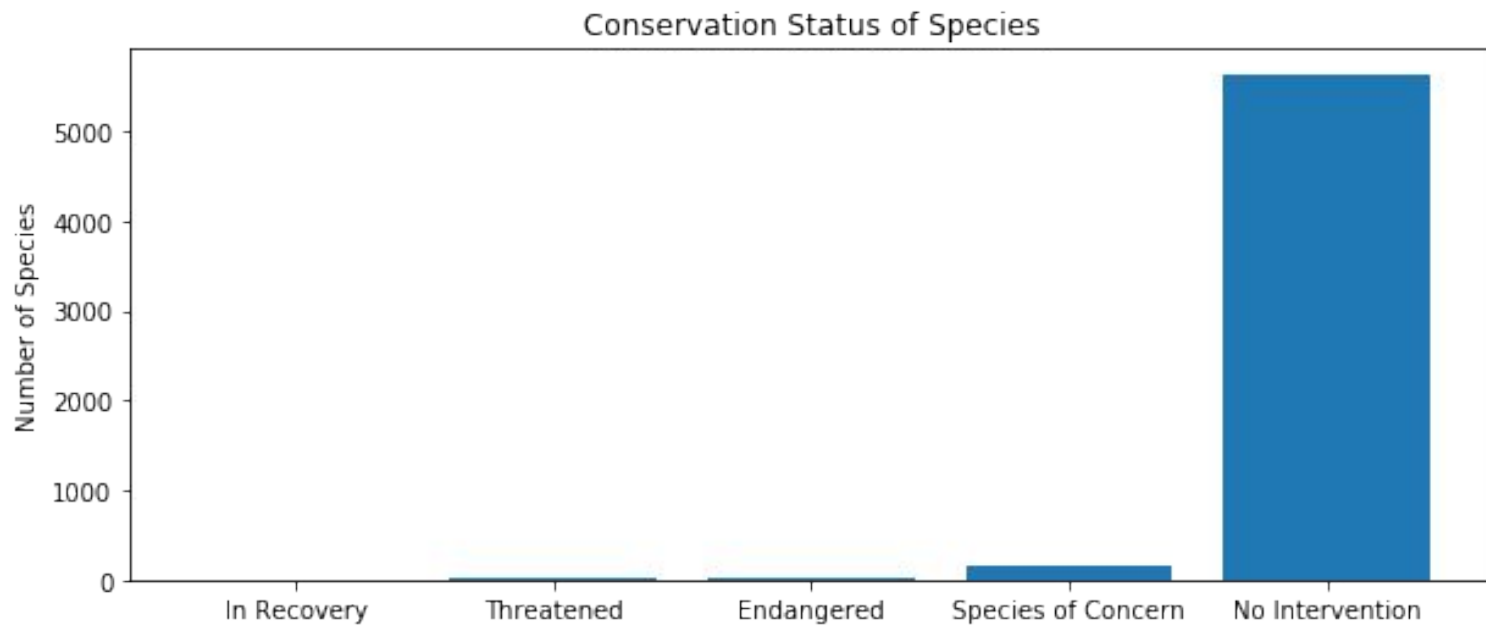
Significance Calculations Between Species

- Grouped species by Category and Protected Status
- Pivoted results such that the each category represents a unique row with a count for both protected (No Intervention) and "not protected" (Species of Concern, Endangered, Threatened, In Recovery)
- Calculated % Protected for each category of species suggesting that Mammals were most endangered as 17.7% require protection
- To determine if this is statistically significant we ran a couple of chi squared tests
  - Comparing Mammals to Birds gives a pval of much greater than .05 and is thus statistically unimportant, meaning we can't say that Mammals are more likely to be endangered than birds
  - Comparing Mammals to Reptiles gives a pval of much less than .05 and is thus significant and mammals ARE more likely to be endangered than reptiles

RECOMMENDATION

Look into the efficacy of programs targeting the protection of mammals habitat. Birds habitat should be watched, as the endangered status is not statistically determined to be better in comparison to mammals. Reptiles appear to be doing statistically better than mammals but as with all animals there is reason for concern and equal protection. Furthermore, individual species are still in need of protection in every category.   Further research is needed to determine whether endangerment rates are falling over time and whether resources can and should be shifted accordingly?   Do programs need to be increased in either scope and/or intensity? This study does not adequately answer those questions but rather points to the need for more investigation.

Foot and Mouth Disease Study

- Loaded in National Park observation data of species seen in a week
- Filtered species data by sheep in the common name (could have looked for 'Ovis' in scientific name as we had to further filter out plants
- Merged sheep and National Park observations data on scientific name giving us a observation count for each park and each species of mammalian sheep
- We grouped the data by park so that we got an observation count for each park for all species of sheep observed
- Graphed the results (see below)
- Calculated the number of sheep that would need to be observed to be confident that we have seen a reduction in Foot and Mouth disease amongst the sheep in each park
- That number was 510 which is approximately 1 week of observations in Yellowstone and 2 weeks in Bryce
- Thus there is enough observational data to determine whether we have seen a reduction in the disease of sheep in Yellowstone Park

Observations of Sheep per Week