Biodiversity in National Parks Case Study

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Understanding The Dataset

species_info.csv

- Data on 5,541 species across
- Scientific name
- Common name
- Kingdom (category)
- Conservation Status

Categories

All species are divided into 7 categories

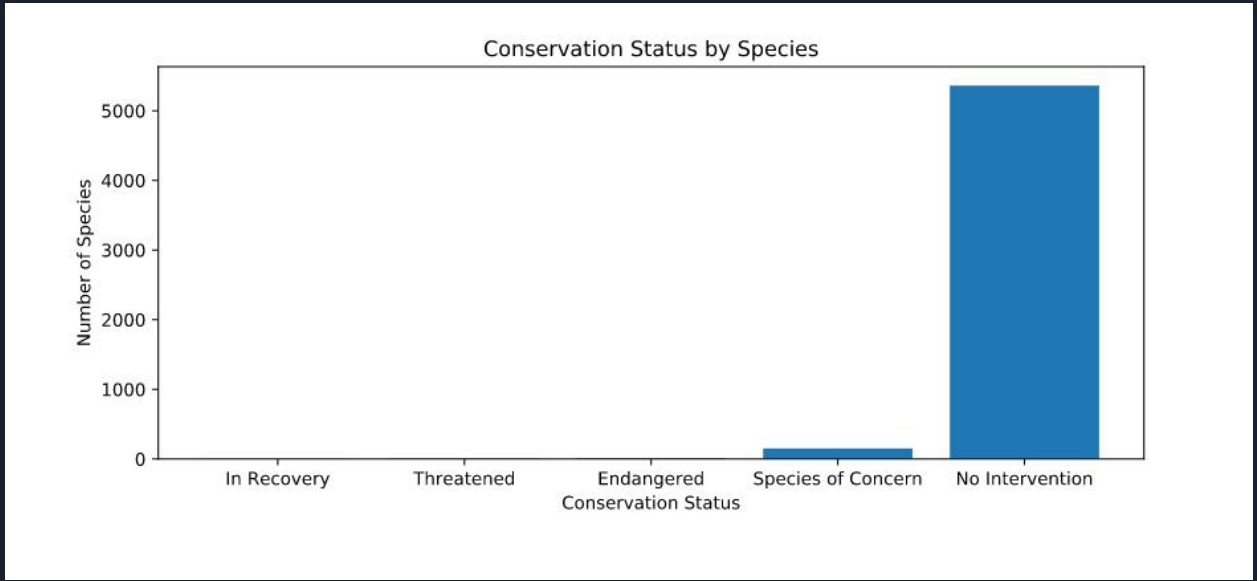
- Mammal
- Bird
- Amphibian
- Fish
- Vascular Plant
- Non-Vascular Plant

Conservation Status

- Species of Concern
- Endangered
- Threatened
- In Recovery
- No Intervention

Conservation Status by Species

- In Recovery - 4
- Threatened - 10
- Endangered - 15
- Concerned - 151
- No Intervention - 5363



Investigating Endangered Species

Are some types of species more likely to become endangered than others?

- Data pivoted so species are grouped by category and protection status
- Columns ‘protected’ and ‘not_protected’ are added
- ‘Percent_protected’ added for each category
- First look indicates mammals are more likely to be endangered than birds, but is it significant?

Chi-Squared Test for Significance: Some species are more likely to be endangered

Mammals vs. Birds

- Create contingency table
- Run chi2_contigency and save P-value
- 0.687594809666
- Null Hypothesis accepted

contingency = [[30, 146],
[75, 413]]

Reptiles vs. Mammals

- Repeat process with new data
- 0.0383555902297 < 0.05
- Results are significant!

Contingency_2 = [[30, 146],
[5, 73]]

Recommendation

- Additional spending on programs that protect reptiles in the wild
- Captive breeding programs in zoos
- Public education on how to protect reptile habitat and avoid purchasing wild caught reptiles

Sheep Analysis & Sample Size Determination

Sheep observations were made over the course of a week across 4 national parks. NPS scientists now want to use this data in a new experiment about the occurrence of foot and mouth disease.

- 15 percent had foot and mouth last year
- Scientists want to be able to detect 5 percent swings with confidence (mde = 33.3)
- Statistical significance at 90%
- This requires a sample size of 870
- 1.7 weeks of observation at yellowstone
- 3.4 weeks of observation at bryce