Biodiversity in the National Parks

A Codecademy Capstone Project

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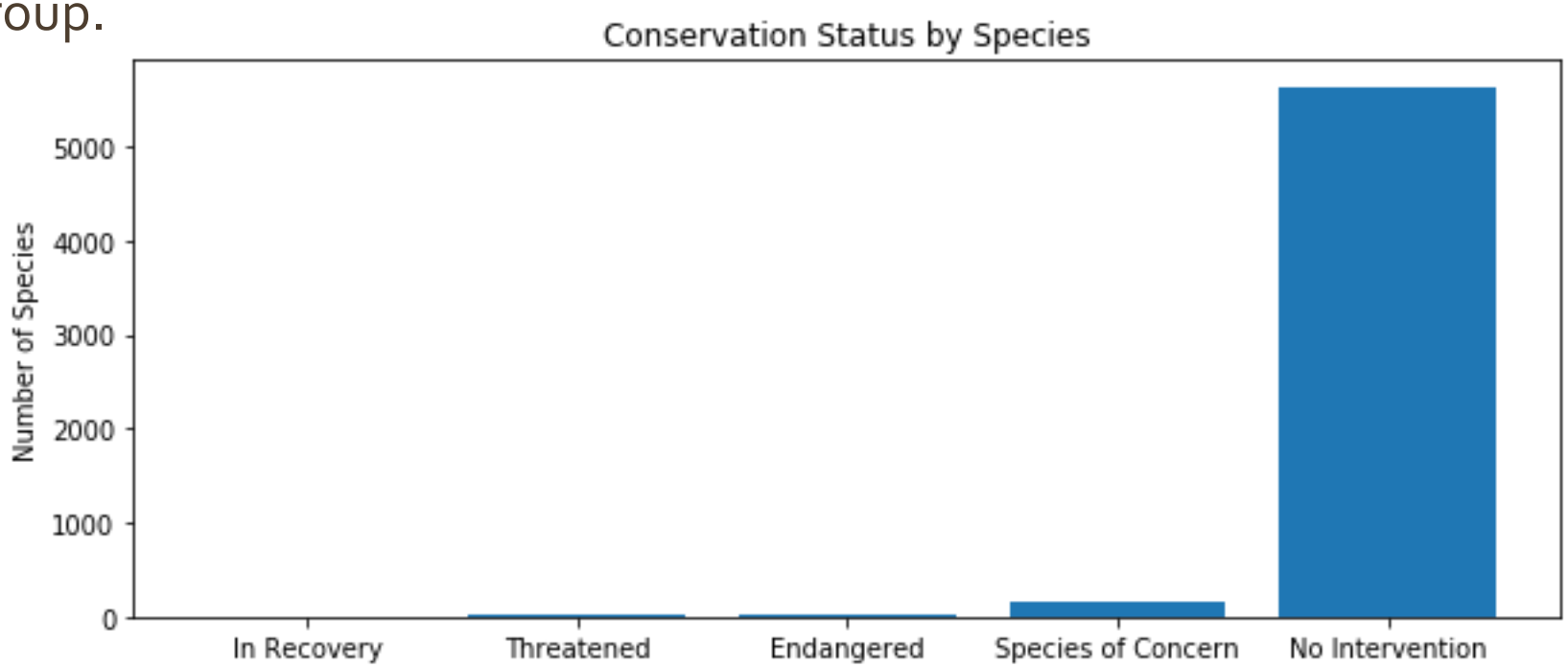
Analysing the data

- The biodiversity of the parks is immense with at least 5541 different species known to science.
- The natural life within the parks placed into 1 of 7 categories:
  - Mammals
  - Birds
  - Reptiles
  - Amphibians
  - Fish
  - Vascular Plants
  - Nonvascular Plants
- Their conservation status was also determined to be:
  - Species of Concern
  - Endangered
  - Threatened
  - In Recovery
  - No Intervention

Analysing the data

- Only 3.2% (180) of the species within the park have a conservation status that requires intervention.
- As seen on the bar chart below there are many fewer species in the 'Threatened' and 'Endangered' groups compared to the 'No Intervention' group.



Performing Significance Tests

- As seen in the pivot table to the right, the highest number of protected species are birds however there is a larger percentage of mammals that are protected. We want to see if there is a significant difference.
- As the data is categorical and we have 2 values for each category we are best to perform a chi square test.
- From this we are able to determine that there is no statistically significant difference between the proportions of each requiring protection. (p-value > 0.68)
- However performing the same test between mammals and reptiles we reject the null hypothesis (as p-value < 0.05)

Category	Not Protected	Protected	% Protected
Amphibian	72	7	8.8
Bird	413	75	15.3
Fish	115	11	8.7
Mammal	146	30	17.0
Nonvascular Plant	328	5	1.5
Reptile	73	5	6.4
Vascular Plant	4216	46	1.0

Recommendation for conservationists

- I would recommend that the efforts to improve the biodiversity in the parks should concentrate on the birds and mammals as they have a much higher proportion of species under a conservation status than any of the other categories.
- Digging into those categories, bats and pack animals like wolves are a large proportion of the animals under conservation, this is usually due to a loss of habitat for the animals to survive in.

Sample Size Determination

- There are 1188 sheep observed each week across the 4 parks.
- The graph below shows the split of observations in each park.
- To determine whether the program to reduce the prevalence of foot and mouth disease by 33.33%, they must observe 520 sheep from each park.
- In Bryce this would take just over 2 weeks and in Yellowstone just over 1 week based on current observation levels.