



Analysis of the Biodiversity in National Parks

Matthew Greenslade



Preface: A note on the data used

All data used for this analysis was provided by the National Parks Service.

A dataset containing the endangerment status for approximately 5800 species was used for statistical analysis. Each species was identified by scientific name, as well as a general group (Mammal, Reptile, etc.) and any common names for the species.

A dataset for the observed numbers of a variety of species of sheep in various national parks was also used when performing some calculations for the Yellowstone National Park foot and mouth disease reduction program.

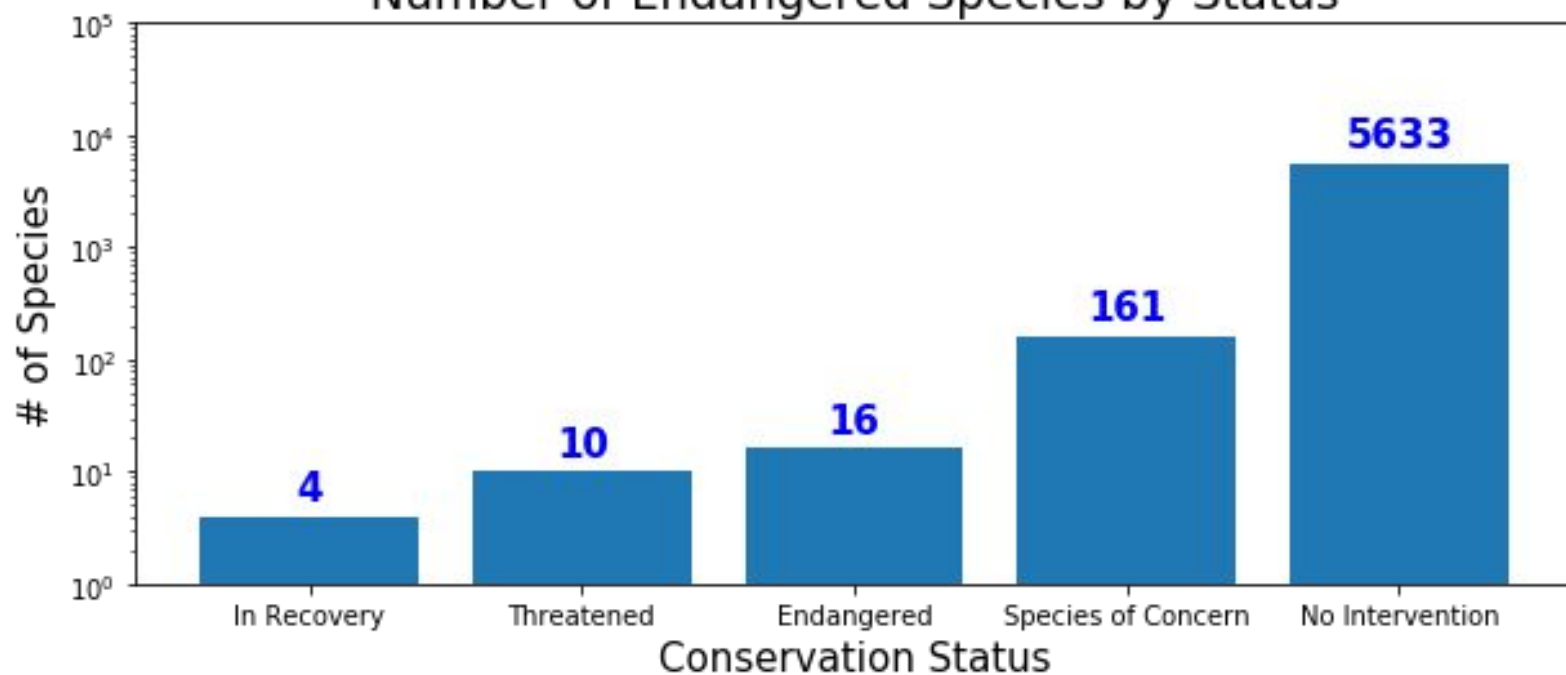
Significance calculations performed on Endangered status data

A count of the number of endangered species per general group was performed, to determine the percentage of endangered species for each group.

A chi squared test was performed based on the number of protected animals vs the number of unprotected animals for several of the groups to determine if there was a significant difference between the percentages calculated.

These tests determined that the Mammal and Bird groups had significantly higher rates of endangerment, and that the Vascular Plant and Nonvascular Plant groups had significantly lower amounts of endangered species

Number of Endangered Species by Status



Recommendations for endangered species

For those using my calculations for the purposes of determining which groups are most at risk, given the limited scope of the data, I recommend focusing primarily on the significantly increased rate of endangerment for specifically mammalian and avian species. I would not recommend diverting focus from current efforts unless future data collection suggests that the number of endangered species in those groups is increasing significantly.

Sample size determination for Yellowstone program

Scientists at Bryce National Park had previously determined that approximately 15% of the sheep observed have foot and mouth disease. This was the rate used as a baseline for the calculations. As well, it was determined that for the results to be significant, a difference of 5 percentage points in the baseline was necessary.

It was determined that a sample size of 520 observations was necessary to be confident of the results. Given the average number of observations per week at Yellowstone, this will take approximately one week.

Observations of Sheep per Week

