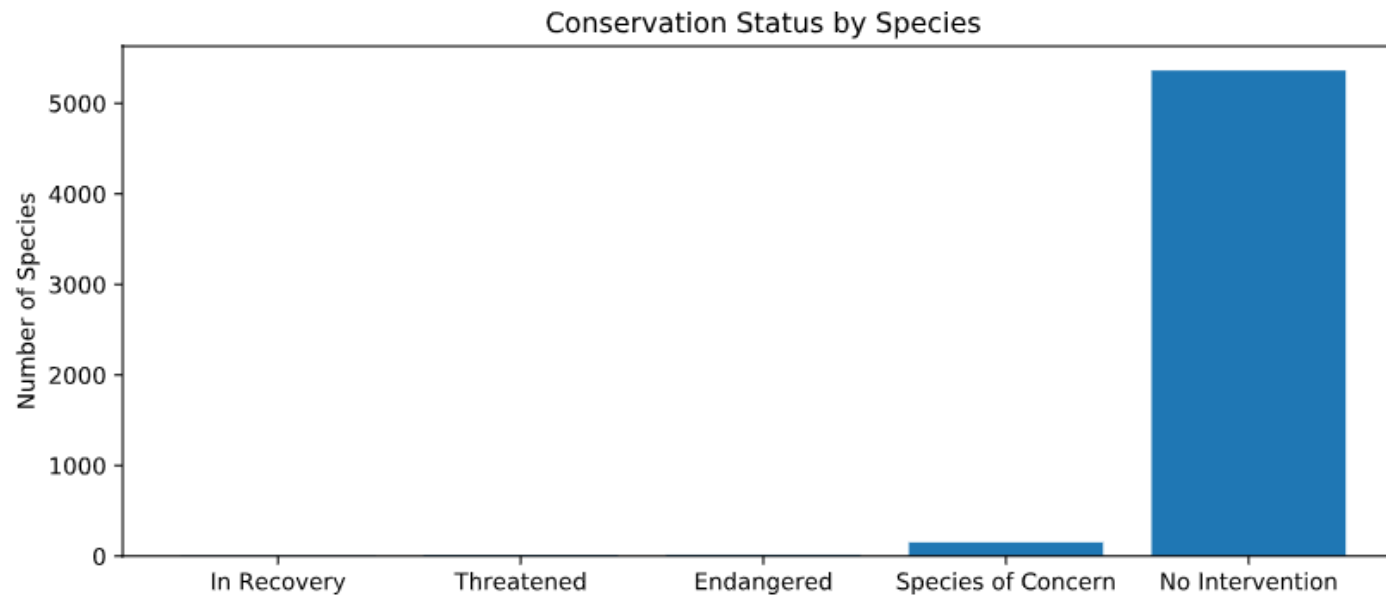# Biodiversity in National Parks

An investigation of the species in our National Parks

Species Information

- 7 categories of species were included: mammal, bird, reptile, amphibian, fish, vascular plant, and nonvascular plant

- The vast majority of species were not endangered and do not require intervention

Conservation Status by Species

Endangered Species Calculations

- To determine if some species were more endangered than others the percentage of each species that was classified as protected (i.e. not 'No Intervention') was calculated

- To determine if the difference between several species was significant or due to randomness a Chi-Squared test was performed

- The Chi-Squared test determined the difference between the percentage of endangered mammals and birds is not significant and therefore the result of chance

- However, when the same test was performed between mammals and reptiles the results were the difference was significant

- This suggests that significantly more of the mammal population is endangered compared to the reptiles

Recommendations for Conservationists

- Based on the analysis of data of endangered species it's safe to say the vast majority of wildlife in the National Parks is safe

- However, there are still species that require attention

- The populations with the highest percentages of endangerment are the birds and mammals

- Our Chi-Squared tests showed that those endangered in these populations are significantly different (i.e. not due to random chance) compared to the rest of the species

- Funding for conservation should be primarily focused on efforts to save mammals and birds rather than the other species

Foot & Mouth Disease Sample Size Determination - 1

▶ To determine the sample size of sheep needed for analysis was determined using an online calculator

▶ The baseline conversion rate was set at 15% since that's the initial measurement of sheep with foot and mouth disease

▶ We decided to have a statistical significance of 90%

▶ The minimum detectable effect was calculated based on our desire to be able to detect reductions of at least 5 percentage points (shown below)

$$\min detectable\ effect = \frac{detect\ reductions\ percent}{baseline} \times 100 = \frac{5 \times 100}{15}$$

Foot & Mouth Disease Sample Size Determination - 2

▶ Using the data mentioned in the previous slide and the online calculator the sample size required is 870 sheep

▶ Using our data of sheep observations per park we were able to determine the number of weeks it would take to observe enough sheep

Observations of Sheep per Week
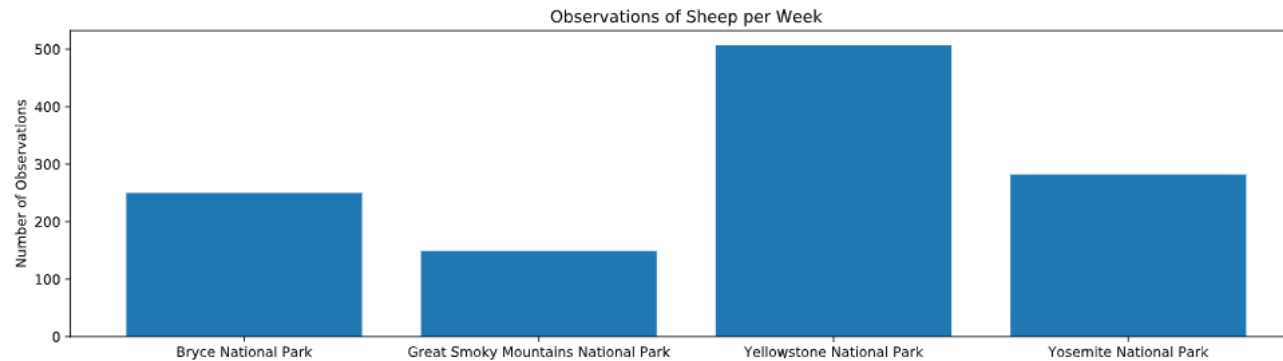
▶ We can see from the graph that in order to observe enough sheep in Yellowstone National Park it would take 1.7 weeks