

Capstone Project

Option 2: Biodiversity for the National Parks

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Species in National Parks

species_info.csv

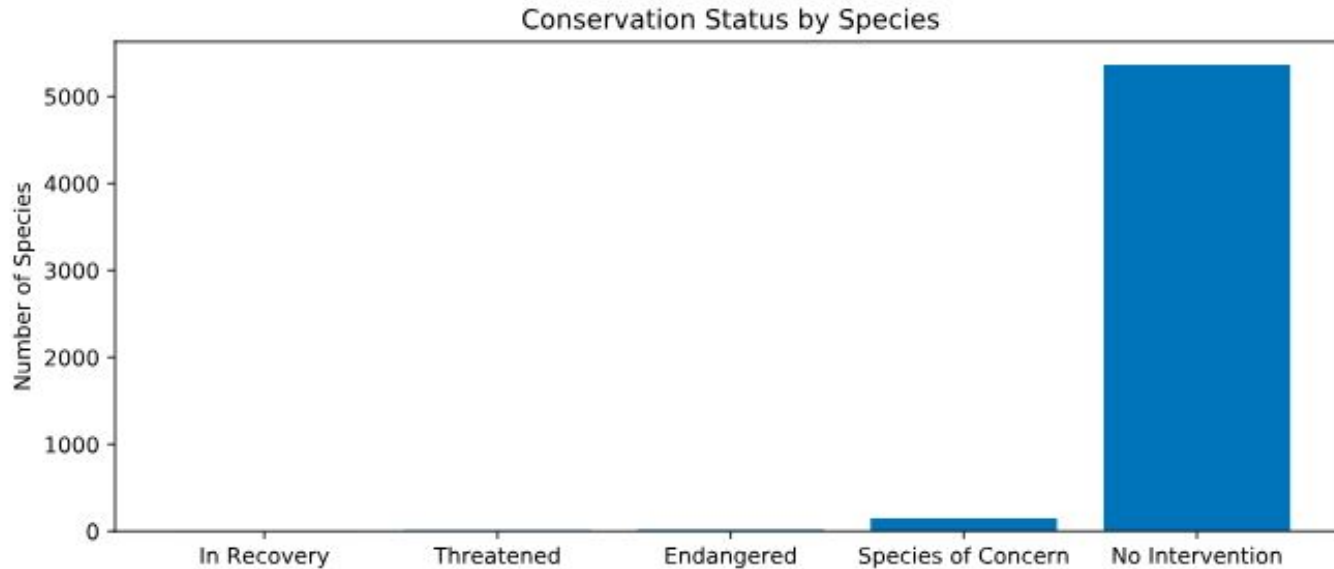
category	scientific_name	common_names	conservation_status
Mammal	Clethrionomys gapperi gapperi	Gapper's Red-Backed Vole	nan
Mammal	Bos bison	American Bison, Bison	nan
Mammal	Bos taurus	Aurochs, Aurochs, Domestic Cattle (Feral), Domesticated Cattle	nan
Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	nan
Mammal	Cervus elaphus	Wapiti Or Elk	nan

7 categories of species: Mammal, Bird, Reptile, Amphibian, Fish, Vascular, Plant & Nonvascular Plant

4 types of conservation status: Species of Concern, Endangered, Threatened & In Recover

Species in need of conservation

Only a small share of overall species is in need of conservation



Contingency among species

Our analysis showed that each category of species has a different likelihood of needing protection

category	not_protected	protected	percent_protected
Amphibian	72	7	0.088608
Bird	413	75	0.153689
Fish	115	11	0.087302
Mammal	146	30	0.170455
Nonvascular Plant	328	5	0.015015

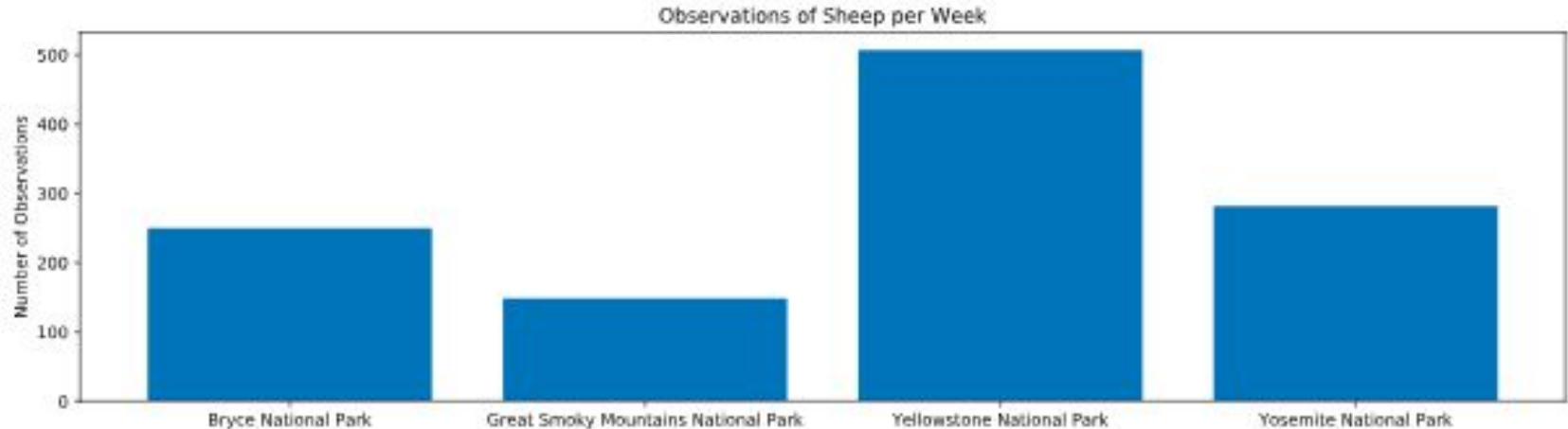
Our Chi2 test of significance showed:

- There is not a statistically significant difference in the likelihood of Birds and Mammals to need protection
- This is a statistically significant difference in the likelihood of Mammals and Reptiles to need protection

Mammals have a higher likelihood of needing protection than Reptiles and scientists should hence pay more attention to Mammals as opposed to Reptiles regarding conservation

Observations of sheep

Most sheep per week are seen in Yellowstone



Sheep disease

Using the sample size calculator we deduced that scientists need to observe 870 sheep to know with 90% confidence that a difference of $>5\%$ in the prevalence of foot and mouth disease is significant

- Baseline was 15%
- Minimum detectable effect was 33% (or 5%/15%)

To get to the desired sample size, scientists would need to observe sheep for approximately 1 week in Yellowstone and approximately 2 weeks in Bryce National Park