Codecademy : Biodiversity Capstone Project

Jaquelin Erazo

Information on Species

- Data saved into species_info.csv
- Information provided on each species:
  - Category (e.g. mammal)
  - Scientific Name
  - Common Name
  - Conservation Status

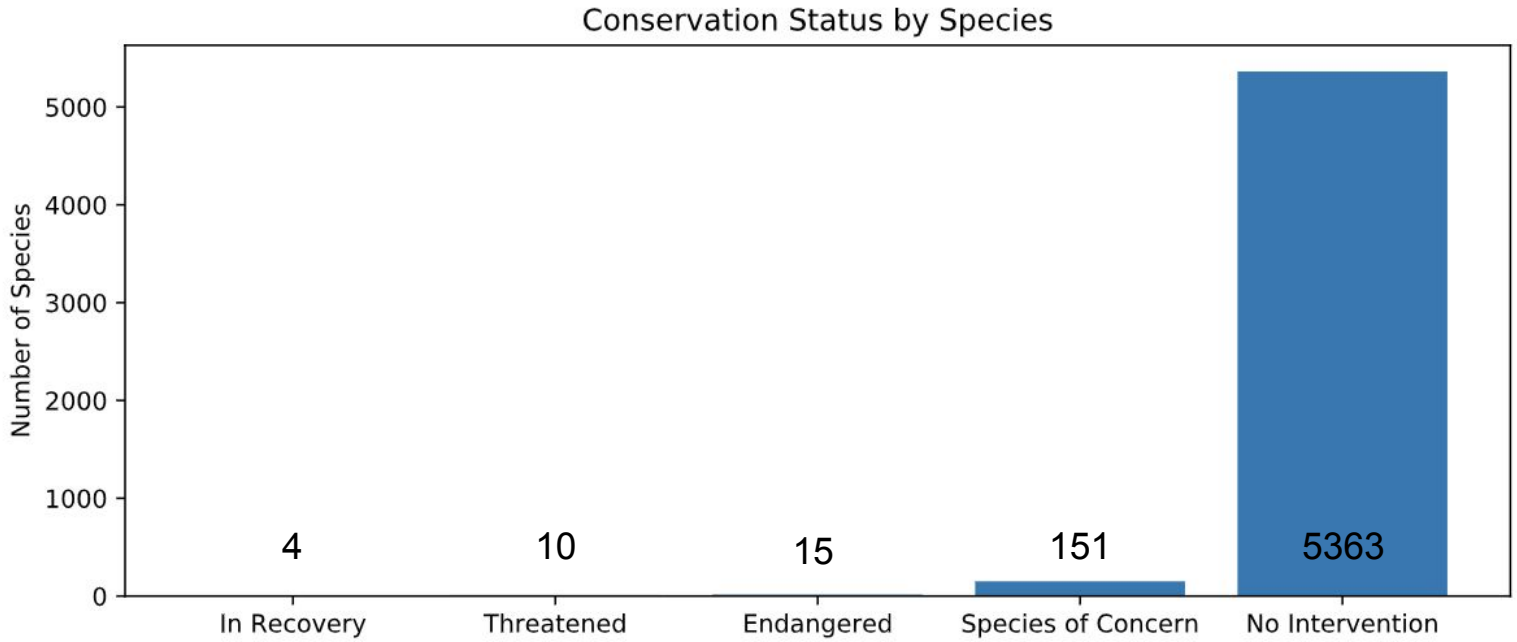
	category	scientific_name	common_names	conservation_status
0	Mammal	Clethrionomys gapperi gapperi	Gapper's Red-Backed Vole	nan
1	Mammal	Bos bison	American Bison, Bison	nan
2	Mammal	Bos taurus	Aurochs, Aurochs, Domestic Cattle (Feral), Domesticated Cattle	nan
3	Mammal	Ovis aries	Domestic Sheep, Mouflon,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

Image: Portion of species_info.csv

Information on Species (cont'd)

- 5541 different species recorded
- 7 different categories
  - Mammal
  - Bird
  - Reptile
  - Amphibian
  - Fish
  - Vascular plant
  - Nonvascular plant
- 5 different conservation statuses
  - Endangered
  - In Recovery
  - No Intervention
  - Species of concern
  - Threatened

Values of Species in Conservation Status



Graph portraying the number of species in each conservation status

Are certain types of species more likely to be endangered?

	category	not_protected	protected	percent_protected
0	Amphibian	72	7	0.088608
1	Bird	413	75	0.153689
2	Fish	115	11	0.087302
3	Mammal	146	30	0.170455
4	Nonvascular Plant	328	5	0.015015
5	Reptile	73	5	0.064103
6	Vascular Plant	4216	46	0.010793

According to the table, mammals are more likely to be endangered than birds, however, is it significant?

Significant Calculations

- Perform a chi-squared test on:
  - birds and mammals
  - Reptiles and mammals
- Find the p-value and determine its significance
  - The smaller the p-value (closer to 0), the more significant
  - The larger the p-value (closer to 1), the less significant
- Resulted p-values:
  - Mammals and birds: 0.687594809666
  - Mammals and reptiles: 0.03835559022

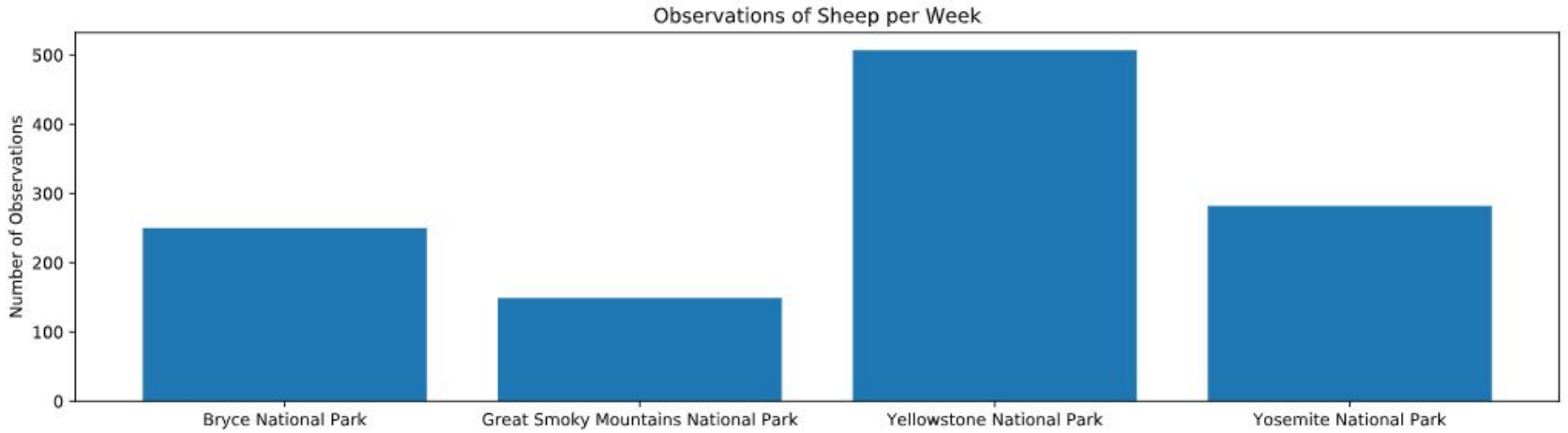
Conclusions & Recommendations

- Conclusions:
  - The difference in percentages of protection between birds and mammals is **NOT** significant
  - The difference in percentages of protection between mammals and reptiles **IS** significant
  - Certain types of species **ARE** more likely to be endangered than other species
- Determine which species are most likely to be endangered & focus on those

Foot and Mouth Reduction Effort

- Testing the program to reduce the rate of foot and mouth disease in sheeps
- Known knowledge: 15% of sheep last year had foot and mouth disease at Bryce National Park
- Need to calculate the number of sheep that need to be observed from each park to ensure significance in foot and mouth percentages

Sheep Observations



Graph: Number of observations of sheep per week in each park

Calculations for Needed Observed Sheep

- Baseline percentage: 15% (from what we know last year)
- Minimum detectable effect: (100 * 5) / 15 = 33.33%
- Sample size calculated: 870
  - We must divide the sample size by the number of observations in each park to find the amount of time (in weeks) for observation is needed in each park
    - Yellowstone: 870 / 507 = 1.71597633136 (approximately 2 weeks)
    - Bryce: 870 / 250 = 3.48 (approximately 3 and a half weeks)