# ANALYSIS OF BIODIVERSITY IN NATIONAL PARKS

Codecademy Intro to Data Analysis

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# CONSERVATION EFFORTS

# DATA PROVIDED FOR PROJECT

Data provided by Codecademy.com to simulate National Parks Data. For each of 5541 unique species in the database information includes:

Category
Scientific Name
Common Names
Conservation Status

Sample of data is included below

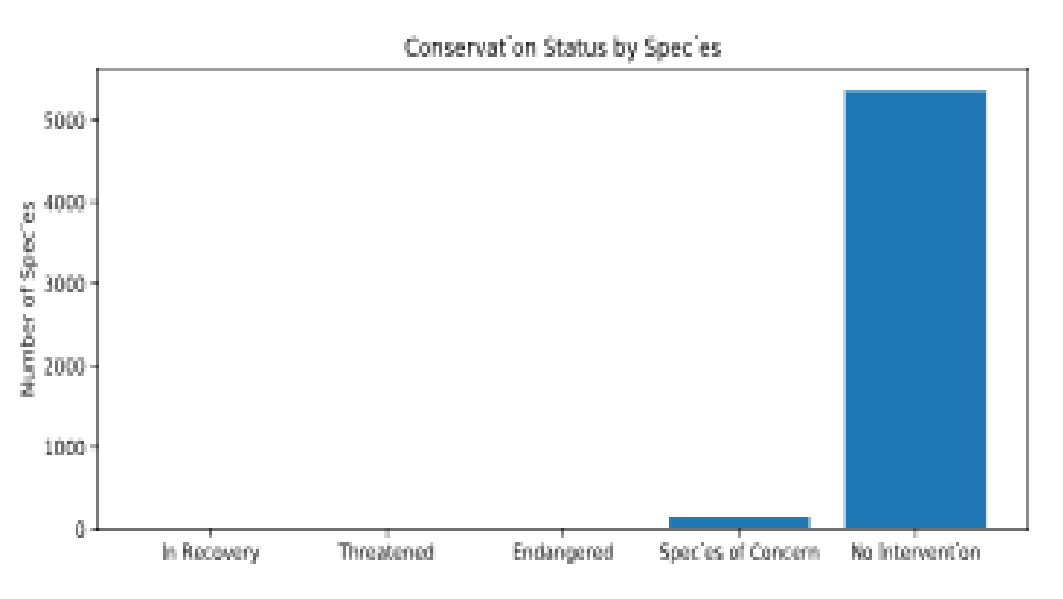
| category | scientific_name | common_names | conservation_status |
|---|---|---|---|
| Mammal | Clethrionomys gapperi gapperi | Gapper's Red-Backed Vole | nan |
| Mammal | Bos bison | American Bison, Bison | nan |
| Mammal | Bos taurus | Aurochs, Aurochs, Domestic Cattle (Feral), Domesticated Cattle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

# DEFINITIONS AND CATEGORIES

- The 5541 unique species were categorized into 7 groups
  - Mammal
  - Bird
  - Reptile
  - Amphibian
  - Fish
  - Vascular Plant
  - Non-Vascular Plant
- The species were also categorized into 5 Conservation Statuses
  - Endangered
  - Threatened
  - In Recovery
  - Species of Concern
  - No Intervention

# CONSERVATION STATUS FREQUENCY

| Conservation Status | Number of Species |
|---|---|
| Threatened | 10 |
| In Recovery | 42 |
| Endangered | 151 |
| Species of Concern | 151 |
| No Intervention | 5363 |




The relatively small numbers represented by species with identified Conservation Status of In Recovery, Threatened, or Endangered are difficult to see on the graph.

Despite the relatively small numbers of species within these categories, the need for their conservation is of imminent concern.

We must ensure the number of species requiring No Intervention continues to grow through continued conservation efforts.

# PROTECTED STATUS BY CATEGORY

Not all differences are statistically significant. For instance, the difference between the percent of Mammals and the percent of Reptiles that are protected is statistically significant. The difference between the percent of Birds and the percent of Mammals that are protected is not statistically significant.

| Category | Not Protected | Protected | Percent Protected |
|---|---|---|---|
| Amphibian | 72 | 7 | 9% |
| Bird | 413 | 75 | 15% |
| Fish | 115 | 11 | 9% |
| Mammal | 146 | 30 | 17% |
| Nonvascular Plant | 328 | 5 | 2% |
| Reptile | 73 | 5 | 6% |
| Vascular Plant | 4216 | 46 | 1% |

# RECOMMENDATION

- Based on available data, conservation efforts should not be based solely on the percent of a category that falls into the ‘Protected’ category as not all differences are significant.

- Birds and Mammals should be given similar consideration due to the lack of a statistically significant difference in the percent protected data.

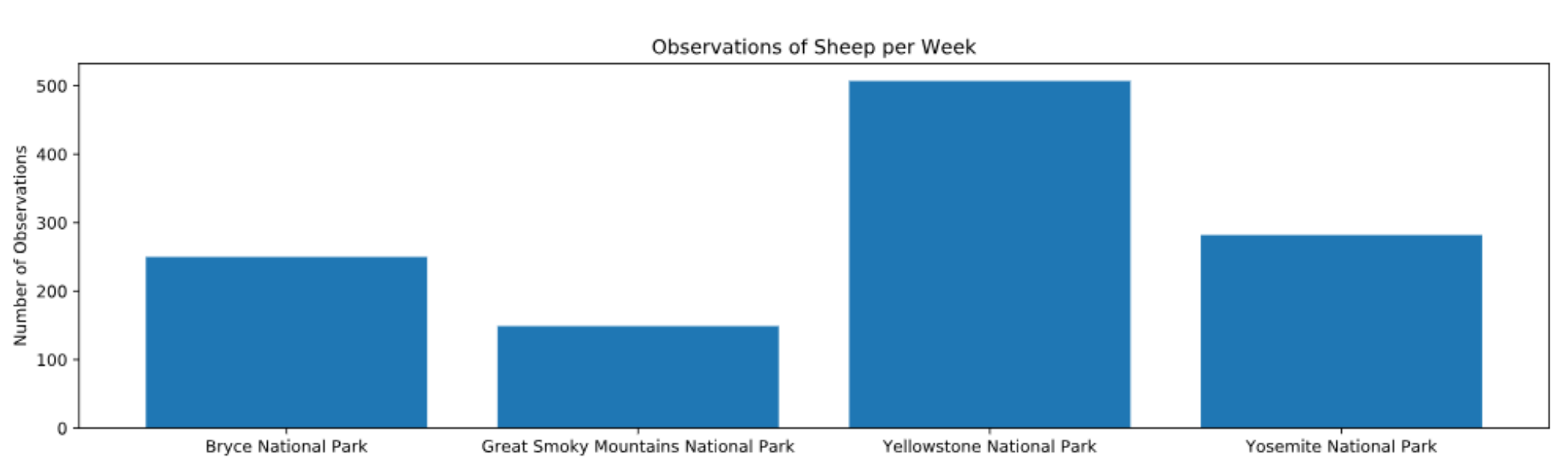
- Mammals may need additional consideration over that given to reptiles due to the statistically higher percent of the category currently considered ‘Protected’.

# SHEEP OBSERVED OVER THE PAST 7 DAYS

| scientific_name | park_name | observations |
|---|---|---|
| Vicia benghalensis | Great Smoky Mountains National Park | 68 |
| Neovison vison | Great Smoky Mountains National Park | 77 |
| Prunus subcordata | Yosemite National Park | 138 |
| Abutilon theophrasti | Bryce National Park | 84 |
| Githopsis specularioides | Great Smoky Mountains National Park | 85 |

# FOOT MOUTH DISEASE STUDY

# SHEEP OBSERVED BY PARK IN THE PAST 7 DAYS



# OBSERVATION TIMES TO DETERMINE WHETHER THERE IS A REDUCTION OF FOOT MOUTH DISEASE

- Given a baseline of 15% occurrence of foot and mouth disease in sheep at Bryce National Park, if the scientists wanted to be sure that a >5% drop in observed cases of foot and mouth disease in the sheep at Yellowstone was significant they would have to observe at least 510 sheep.
- Based on the data on the previous slide, scientists would need one week of observing in Yellowstone to see that many sheep, or approximately two weeks in Bryce to see that many sheep.