# BIODIVERSITY OF THE NATIONAL PARKS

DATA ANALYSIS ON ENDANGERED SPECIES AND FOOT & MOUTH DISEASE AT THE PARK

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# SPECIES INFORMATION

- The given data in file species_info.csv contains 5824 data which means 5824 sample have been observed.
- The information contained in the data are the category, the scientific name, the common names, and the conservation status.
- Part of the table is shown below :

| | 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 |

# SPECIES INFORMATION

- The data observed includes 5541 species, which are categorized in 7 types of category :
  1) Mammal
  2) Bird
  3) Reptile
  4) Amphibian
  5) Fish
  6) Vascular plant
  7) Non-vascular plant

# SPECIES INFORMATION

Every species is in the list of the conservation status which is summarized in the table below :

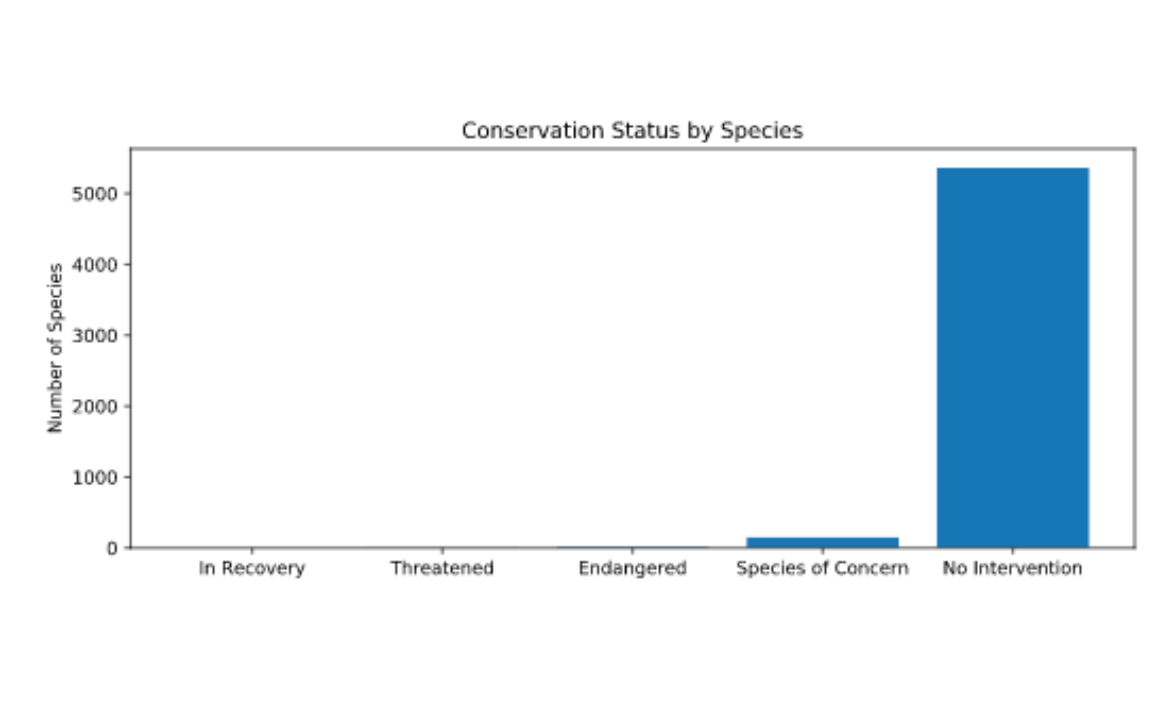
| | | |
|---|---|---|
| 0 | Endangered | 15 |
| 1 | In Recovery | 4 |
| 2 | No Intervention | 5363 |
| 3 | Species of Concern | 151 |
| 4 | Threatened | 10 |

Most of the species observed are in the category of ‘no intervention’ in the conservation status, means that they are not endangered species

The least of them are in the ‘in recovery’ status.

# SPECIES INFORMATION

The bar chart showing the composition of species in the category of conservation status



# ENDANGERED SPECIES

The table below shows the category of the species in percentage

| 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 |
| Reptile | 73 | 5 | 0.064103 |
| Vascular Plant | 4216 | 46 | 0.010793 |

# ENDANGERED SPECIES

- From the previous table, it looks like mammals are the most likely type of species to be endangered, followed by birds.
- Using Chi-Square Test, with p-value = 0.688, the difference between mammals and birds above is not significant.
- The Chi-Square Test to examine the significance of the difference between reptiles and mammals gave p-value of 0.038, means it is significantly difference.

# CONCLUSION AND RECOMMENDATION ABOUT ENDANGERED SPECIES

- The hypothesis of the difference in the percentages of birds and mammals in the protected category is a result of chance, can be accepted.
- Certain types of species are more likely to be endangered than others.
- Conservationists to put more concern on the category of birds and mammals as they are more endangered than other types of species in the national parks.

# OBSERVATIONS BY NATIONAL PARKS

The record of total number of sheep observed in each national parks for 7 days is provided in the table below :

| | park_name | observations |
|---|---|---|
| 0 | Bryce National Park | 250 |
| 1 | Great Smoky Mountains National Park | 149 |
| 2 | Yellowstone National Park | 507 |
| 3 | Yosemite National Park | 282 |

# FOOT & MOUTH DISEASE AT YELLOWSTONE NATIONAL PARK

There was a program have been running at Yellowstone National Park to reduce the rate of foot and mouth disease. The calculation was made to test if the program is working by reducing at least 5% of the disease.

Using the level of significance 90%, and the information recorded from Bryce National Park last year that 15% of sheep at the park have foot and mouth disease :

- Sample size needed is 510 sample
- The time needed to be spent at Yellowstone National Park to observe 510 sheep is 1 week.