

- Reviewable project
Biodiversity for the
National Parks

Anaël Jaffrès

DESCRIPTION OF THE DATA “species_info.csv”

The data in **species_info.csv** give access to four kind of informations related to the studied species :

1. The category or species type : Mammal, Bird, Reptile, Amphibian, Fish or Vascular Plant
2. The scientific name → 5541 different species in total in this study
3. The common name
4. The conservation status : NaN or No Intervention, Species of Concern, Endangered, Threatened, In Recovery

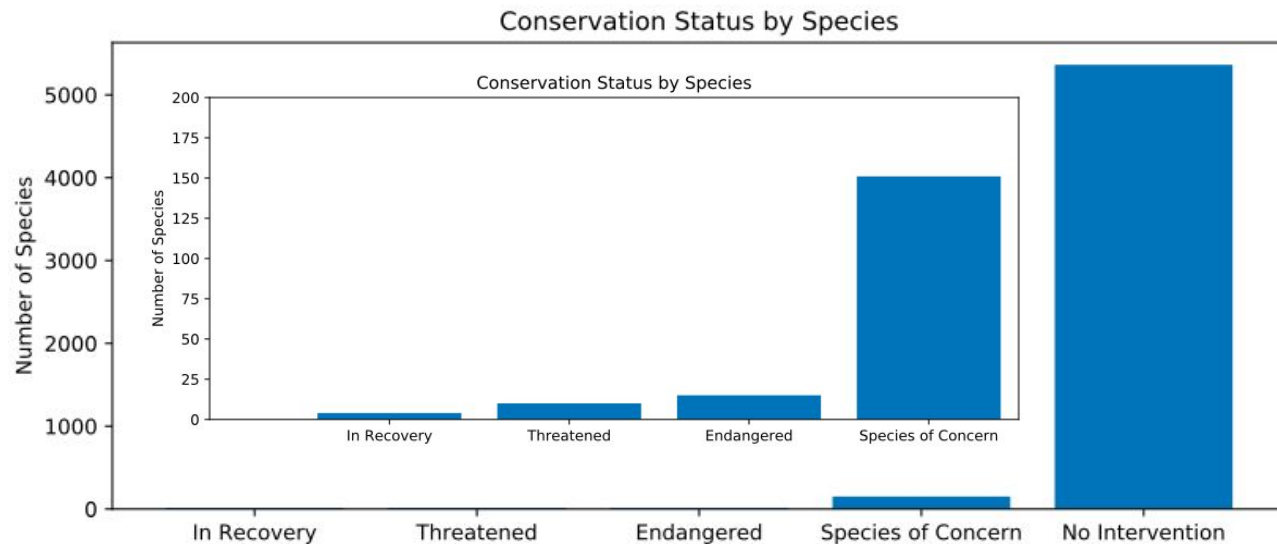
Example : 5 first lines of the data in **species_info.csv**

| | category | scientific_name | common_names | conservation_status |
|---|----------|-------------------------------|--|---------------------|
| 0 | Mammal | Clethrionomys gapperi gapperi | Gapper's Red-Backed Vole | No Intervention |
| 1 | Mammal | Bos bison | American Bison, Bison | No Intervention |
| 2 | Mammal | Bos taurus | Aurochs, Aurochs, Domestic Cattle (Feral), Domesticated Cattle | No Intervention |
| 3 | Mammal | Ovis aries | Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral) | No Intervention |
| 4 | Mammal | Cervus elaphus | Wapiti Or Elk | No Intervention |

ANALYSIS OF CONSERVATION STATUS

Number of species depending on the conservation status : table and bar chart

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



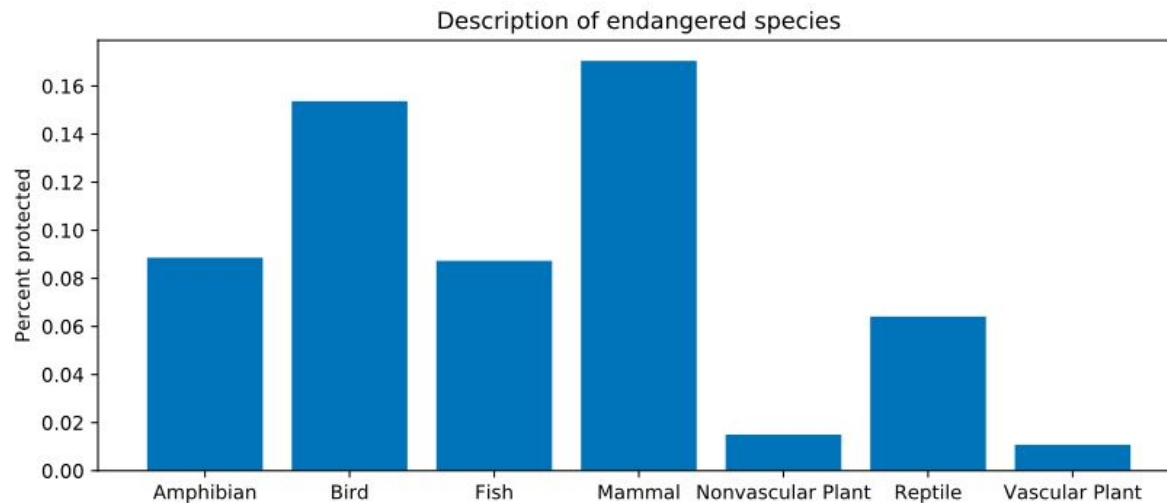
→ A majority of species does not need an intervention from humans !

● INVESTIGATING ENDANGERED SPECIES (I)

Are certain types of species more likely to be endangered ?

● Table describing the percent of protection versus the species category

| Category | Reptile | Fish | Amphibian | Vascular Plant | Nonvascular Plant | Bird | Mammal |
|---------------------------|---------------|---------------|---------------|----------------|-------------------|----------------|----------------|
| Percent of protection (%) | 6.4103 | 8.7302 | 8.8608 | 1.0793 | 1.5015 | 15.3689 | 17.0455 |



INVESTIGATING ENDANGERED SPECIES (II)

Chi-Square test performed to analyze the significance of those results

| Categories | pval | Result |
|---|--------------|---------------------------------|
| Mammals versus Birds | 0.688 | Difference due to chance |
| Mammals versus Reptiles | 0.038 | Significant difference |
| Nonvascular plant versus vascular plant | 0.662 | Difference due to chance |
| Amphibian/Fish/Reptile | 0.81 | Difference due to chance |

→ 3 groups of endangered species, one regrouping Mammal and Bird, which are more likely to be endangered than the second group involving the categories Reptile, Fish and Amphibian. The third group (Vascular and Nonvascular plant) are the less endangered species.

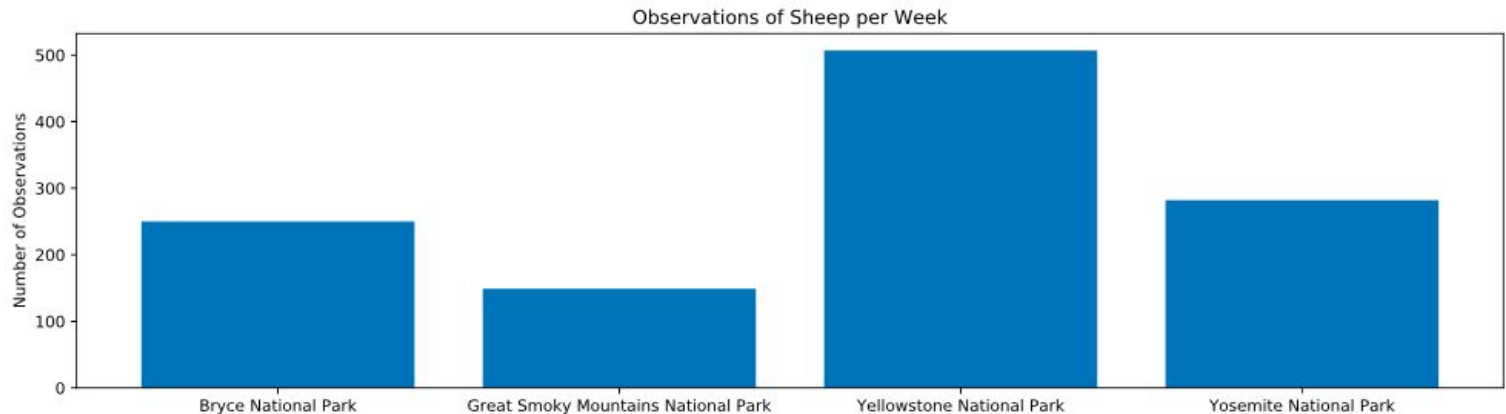
Final thoughts on protected species : the species belonging to mammals and birds should be protected in priority !

IN SEARCH OF SHEEPS

| | scientific_name | park_name | observations |
|---|--------------------------|-------------------------------------|--------------|
| 0 | Vicia benghalensis | Great Smoky Mountains National Park | 68 |
| 1 | Neovison vison | Great Smoky Mountains National Park | 77 |
| 2 | Prunus subcordata | Yosemite National Park | 138 |
| 3 | Abutilon theophrasti | Bryce National Park | 84 |
| 4 | Githopsis specularioides | Great Smoky Mountains National Park | 85 |

Observations of sheeps at each national park

| | 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 AND MOUTH DISEASE : SAMPLE SIZE

| | | |
|----------------------------|-------------|---|
| Baseline conversion rate: | 15 | % |
| Statistical significance: | 85% 90% 95% | |
| Minimum detectable effect: | 33 | % |
| Sample size: | 890 | |

Sample size determination : we need at least 890 sheep to have significant results, so 2 weeks of observations in Yellowstone National Park and 4 in Bryce National Park.