

# Biodiversity Capstone Project

By Todd Grayson

## Species Data Structure and First Five Record

|   | 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), Dom... | NaN                 |
| 3 | Mammal   | Ovis aries                    | Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral) | NaN                 |
| 4 | Mammal   | Cervus elaphus                | Wapiti Or Elk                                     | NaN                 |

# Species Data Analysis

- 5,541 Unique Species
- Species Categories: Mammal, Bird, Reptile, Amphibian Fish, Vascular Plant, Non-Vascular Plant
- Conservation Status Categories: Species of Concern, Threatened, Endangered, In Recovery
- 200 Unique Species with Conservation Status

# Species Data Analysis

- Conservation Status by Species

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

- Percentage of category that are protected

|   | 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          |

# Recommendations

- Birds and Mammals are equally likely to be protected so the Park Service should focus on those two categories.

# Sheep Observances in National Parks

|    | scientific_name         | park_name                           | observations | category | common_names                                      | conservation_status | is_protected | is_sheep |
|----|-------------------------|-------------------------------------|--------------|----------|---|---------------------|--------------|----------|
| 0  | Ovis canadensis         | Yellowstone National Park           | 219          | Mammal   | Bighorn Sheep, Bighorn Sheep                      | Species of Concern  | True         | True     |
| 1  | Ovis canadensis         | Bryce National Park                 | 109          | Mammal   | Bighorn Sheep, Bighorn Sheep                      | Species of Concern  | True         | True     |
| 2  | Ovis canadensis         | Yosemite National Park              | 117          | Mammal   | Bighorn Sheep, Bighorn Sheep                      | Species of Concern  | True         | True     |
| 3  | Ovis canadensis         | Great Smoky Mountains National Park | 48           | Mammal   | Bighorn Sheep, Bighorn Sheep                      | Species of Concern  | True         | True     |
| 4  | Ovis canadensis sierrae | Yellowstone National Park           | 67           | Mammal   | Sierra Nevada Bighorn Sheep                       | Endangered          | True         | True     |
| 5  | Ovis canadensis sierrae | Yosemite National Park              | 39           | Mammal   | Sierra Nevada Bighorn Sheep                       | Endangered          | True         | True     |
| 6  | Ovis canadensis sierrae | Bryce National Park                 | 22           | Mammal   | Sierra Nevada Bighorn Sheep                       | Endangered          | True         | True     |
| 7  | Ovis canadensis sierrae | Great Smoky Mountains National Park | 25           | Mammal   | Sierra Nevada Bighorn Sheep                       | Endangered          | True         | True     |
| 8  | Ovis aries              | Yosemite National Park              | 126          | Mammal   | Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral) | No Intervention     | False        | True     |
| 9  | Ovis aries              | Great Smoky Mountains National Park | 76           | Mammal   | Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral) | No Intervention     | False        | True     |
| 10 | Ovis aries              | Bryce National Park                 | 119          | Mammal   | Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral) | No Intervention     | False        | True     |
| 11 | Ovis aries              | Yellowstone National Park           | 221          | Mammal   | Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral) | No Intervention     | False        | True     |

# Sheep Observances By Park

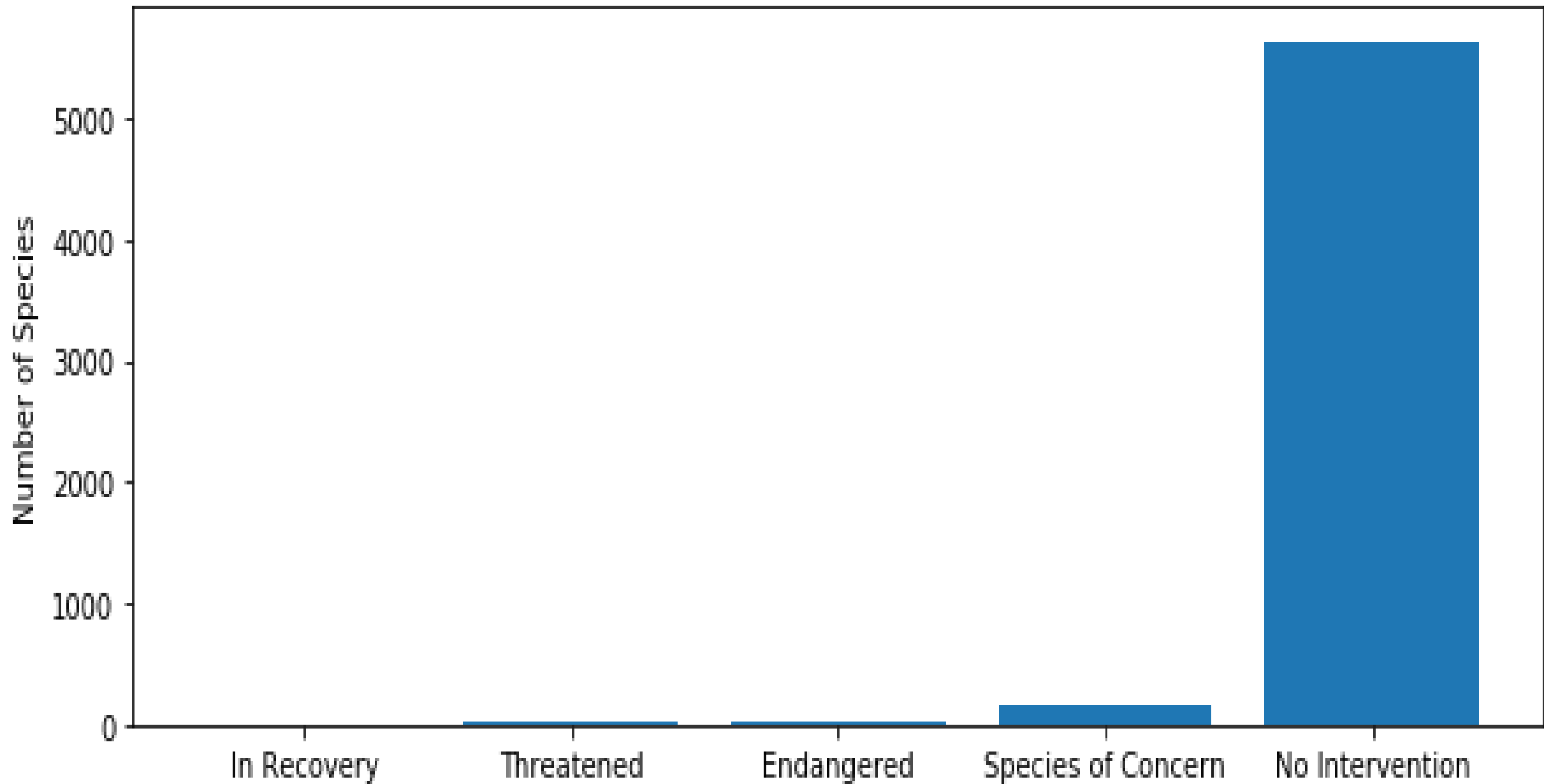
|   | park_name                           | observations |
|---|-------------------------------------|--------------|
| 0 | Bryce National Park                 | 250          |
| 1 | Great Smoky Mountains National Park | 149          |
| 2 | Yellowstone National Park           | 507          |
| 3 |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

# Sample Size Determination

- The Park Service needs to observe 34 sheep to determine if the program is working
- This will take two weeks at Bryce and one week at Yellowstone



Conservation Status by Species



Observations of Sheep per Week

