Biodiversity for the National Parks

An Analysis by Jason Zhu

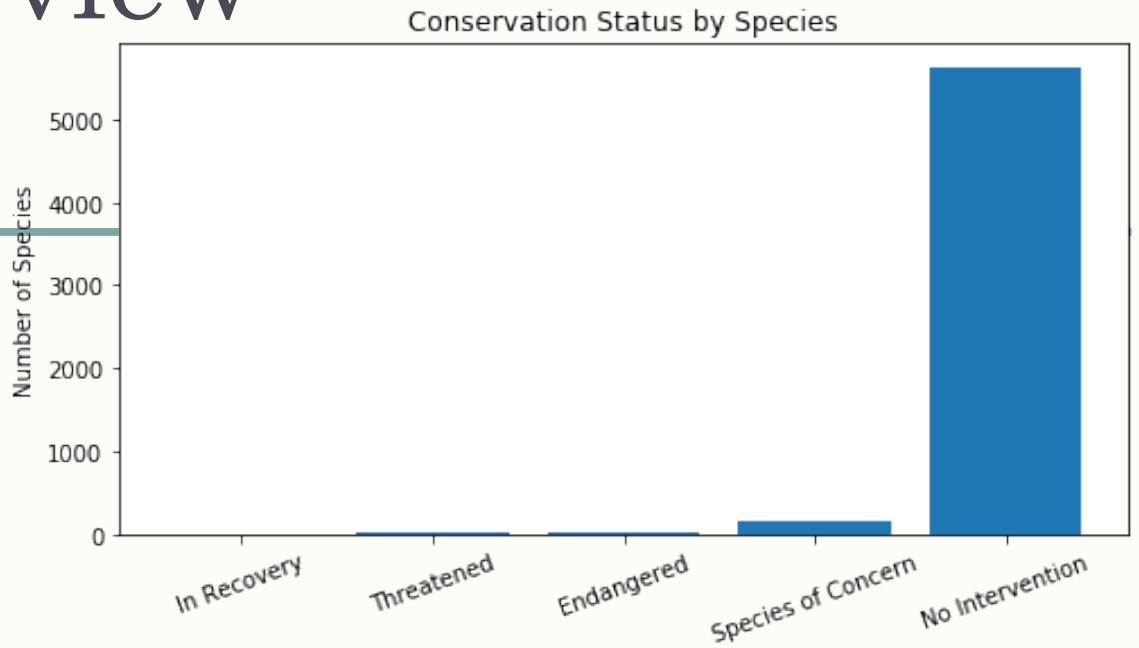
Objectives

- Analyse data on endangered species from several different parks.
- Perform some data analysis on the conservation statuses of these species.
- Investigate if there are any patterns or themes to the types of species that become endangered.

Species Overview

- Total 5541 species live in the national parks.
- The vast majority of species do not require conservation intervention!

- 5 conservation statuses:
- **Species of Concern**
- **Endangered**
- **Threatened**
- **In Recovery**
- **No Intervention**



Conservation Status	Number of Species
In Recovery	4
Threatened	10
Endangered	16
Species of Concern	161
No Intervention	5633

Species Overview
The categories in these species

Category	Count
Amphibian	79
Bird	488
Fish	125
Mammal	176
Nonvascular Plant	333
Reptile	78
Vascular Plant	4262

- The category has most species is Vascular Plant which has 4262 species.

Most Likely Endangered species

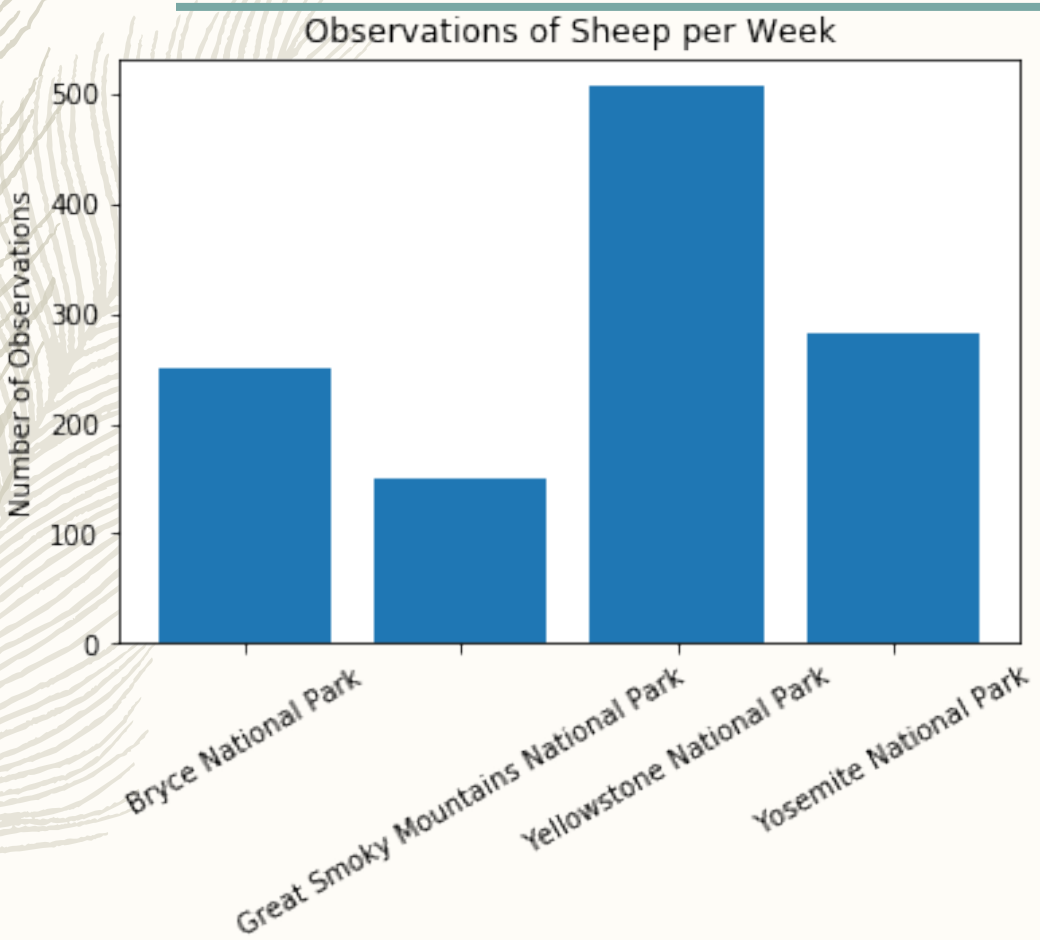
category	Not Protected	Protected	Protected Rate
Amphibian	72	7	0.088608
Bird	413	75	0.153689
Fish	115	11	0.087302
Mammal	146	30	0.170455
Nonvascular Plant	328	5	0.015015
Reptile	73	5	0.064103
Vascular Plant	4216	46	0.010793

- The two species types most at risk of becoming endangered are mammals with17% and birds with 15%.
- Use *chi squared test* to identify the difference of mammals and birds.
- P-value is 0.6876.
- The result shows this difference isn't significant.

Recommendation

- Focus conservation efforts on those species which are the most likely to become endangered, such as mammals and birds.
- Perform regular analysis of all populations to assess risk over time.

Foot and mouth disease of Sheep



- Some scientists are studying the number of sheep sightings at different national parks.
- Our scientists know that 15% of sheep at Bryce National Park have foot and mouth disease.
- They want to be able to detect reductions of at least 5 percentage points.
- Minimum Detectable Effect is 33.34

Observe sheep at Bryce National and Yellowstone National Park

- The sample size we need at Bryce National Park is 870.
- Bryce National Park need 3.48 weeks in order to observe enough sheep.
- The sample size we need at Yellowstone National Park is 810.
- Yellowstone National Park need 1.60 weeks to observe enough sheep.