

National Parks Service

Biodiversity Investigation

Species Overview

What do we track?

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- 5,541 Species
 - Scientific Names
 - Common Names
- 7 Categories of Species:
 - Mammal
 - Bird
 - Reptile
 - Amphibian
 - Fish
 - Vascular Plant
 - Nonvascular Plant
- Conservation Status

Conservation Status

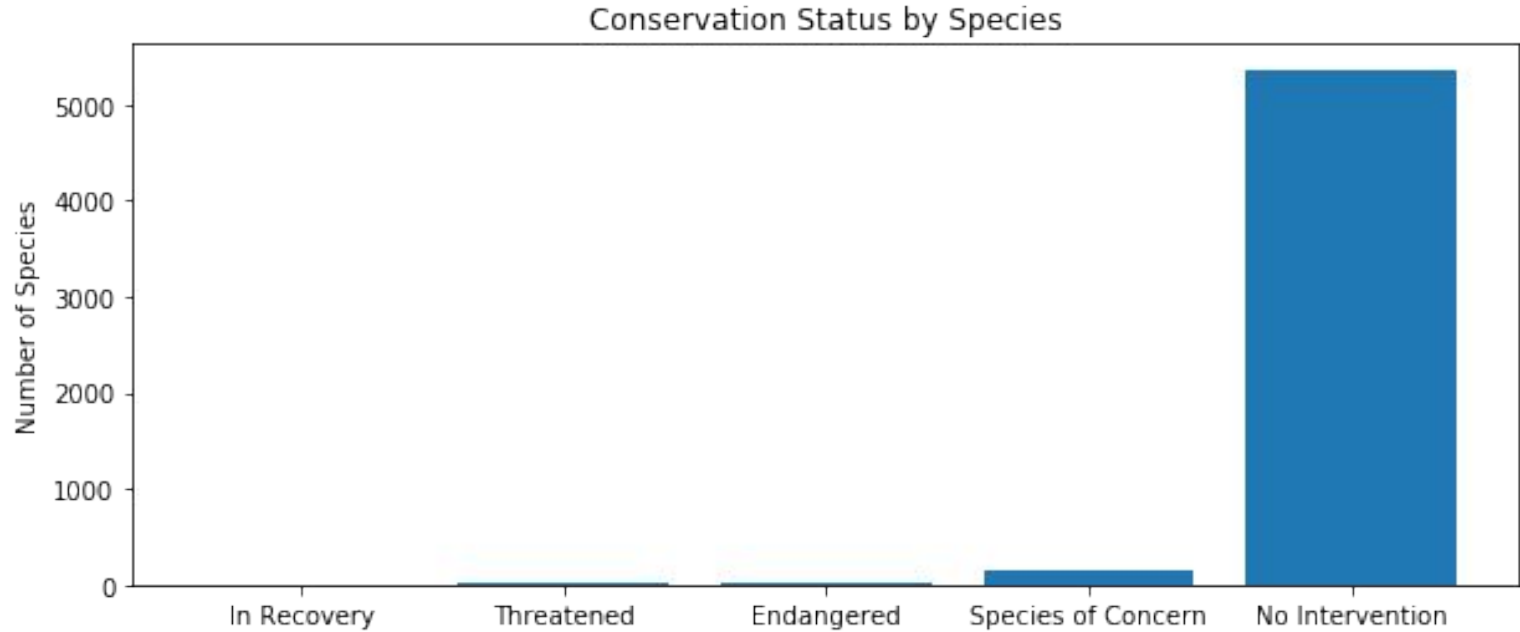
Conservation Statuses

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- **Species of Concern:**
 - Declining or appear to be in need of conservation
- **Threatened:**
 - Vulnerable to endangerment in the near future
- **Endangered:**
 - Seriously at risk of extinction
- **In Recovery:**
 - Formerly Endangered, but currently neither in danger of extinction throughout all or a significant portion of its range
- **No Intervention:**
 - Protection is not currently required

Conservation Status - All Species

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Protection Status by Category of Species

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	Not Protected	Protected	Percent Protected
Amphibian	72	7	8.9%
Bird	413	75	15.4%
Fish	115	11	8.7%
Mammal	146	30	17.0%
Nonvascular Plant	328	5	1.5%
Reptile	73	5	6.4%
Vascular Plant	4216	46	1.1%

Significance Calculations

- Mammals have the highest percentage of species needing protection (17%)
- We tested to see if Mammal species are more likely to be endangered than Bird species, and the result was not significant ($pval = 0.688$)
- We tested to see if Mammal species are more likely to be endangered than Reptile species, and the results were significant ($pval = 0.038$)

Recommendations

- Focus protection efforts on Birds and Mammals



Sheep Investigations

Sheep Tracking

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We have been tracking observations on all of the species at 4 national parks:

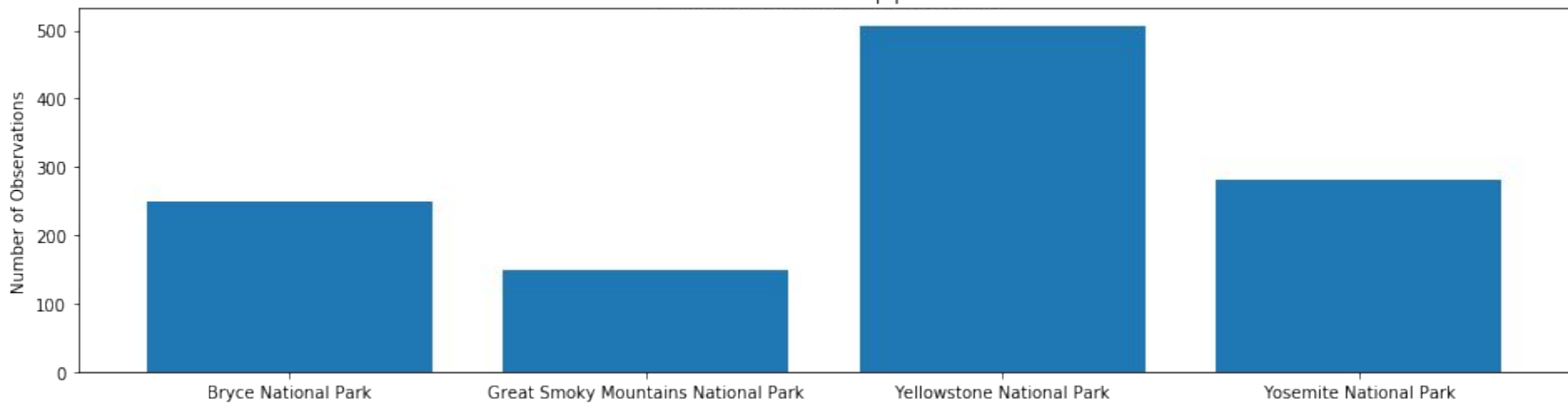
- Bryce National Park
- Great Smoky Mountains National Park
- Yellowstone National Park
- Yosemite National Park

There are 3 species of sheep that our scientists are studying at these National Parks:

- *Ovis aries*
- *Ovis canadensis*
- *Ovis canadensis sierrae*

Sheep Observations

Observations of Sheep per Week



Foot and Mouth Disease Reduction Program

15%



Our study has shown that 15% of sheep in Bryce Park currently have Foot and Mouth Disease. Our park rangers have been working on a program to reduce this number.

Sample Size Determination

In order to determine if the program has been successful, we will need to evaluate 510 sheep at both Bryce National Park and Yellowstone National Park

- This number was reached from the following assumptions:
 - We expect to see at least a 33% reduction in the disease if our efforts are working (reduction from 15% prevalence to 10%)
 - Statistical Significance level of 90%

Next Steps

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- In order to evaluate this, we will need the following time for observations:
 - 1 week at Yellowstone National Park
 - 2 weeks at Bryce National Park
- After we have evaluated the sheep, we will re-evaluate our program and update our next goals