Endangered Species: An Update & Action Plan

What do US National Parks Tell us About Vulnerable Species, and What Can be Done to Help Them?

Update on Endangered Species: Our Data Set

Common & Scientific Names for Species

Our data categorized species according to class and scientific name, but we included common names as well. For example, one entry might contain:

Bos Bison, American Bison, Category = Mammal

Conservation Status

Endangered: seriously at risk of extinction

Threatened: vulnerable to endangerment in near future

Species of Concern: in need of conservation

In Recovery: formerly endangered

Data: Where did it come from?

We used data from our national parks.
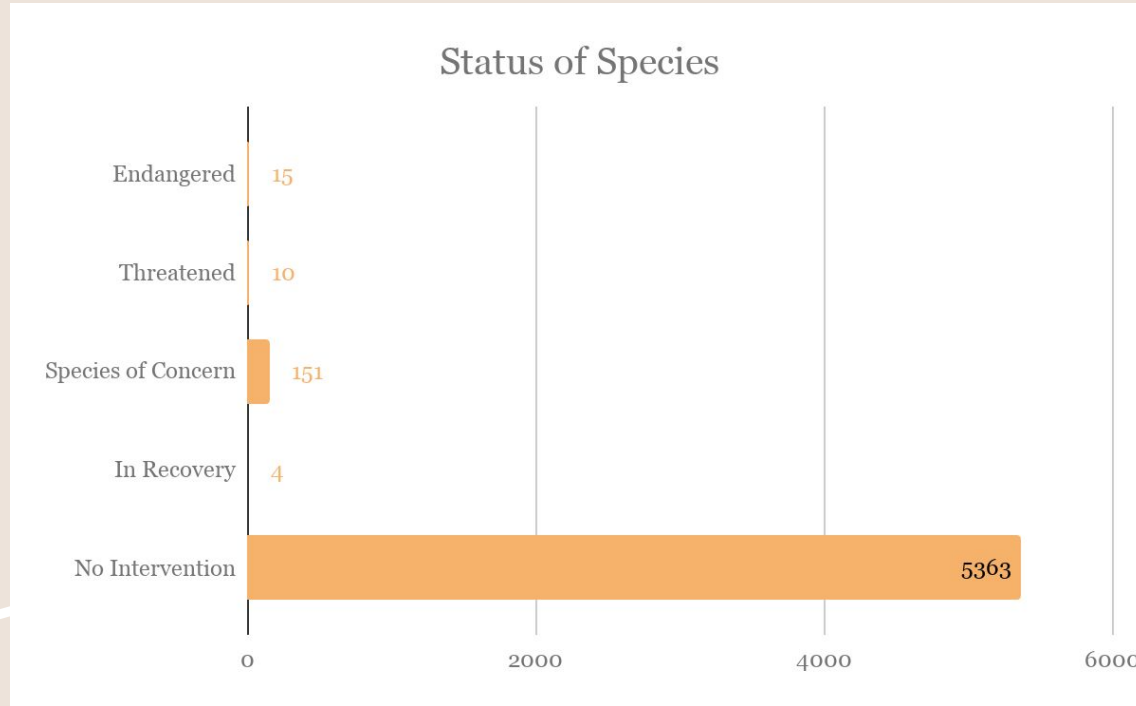
Observational data came from:

Yellowstone

Yosemite

Great Smoky Mountains

Bryce

Update on Endangered Species

Status of Species

We found the overwhelming number of species in our data set require no intervention.

Action Plan on Endangered Species: Key Findings

Likelihood of Endangerment

Are certain classes of species more likely to be endangered?

Our analysis says:

YES

Mammals & **birds** have the highest percentage of species in some kind of protected status.

```
     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
```

Mammals: 17%

Birds: 15%

Action Plan on Endangered Species: Key Findings

Likelihood of Endangerment

Editor's note: we found **no statistically significant difference** between the results for mammals and birds...

...and must therefore say that the slight difference in percentages presented here could be the result of chance.

```
   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
```

In other words:

both birds and mammals need additional attention from us as the categories most susceptible to endangerment!

Results from Our Observational Data

Reminder

To Estimate

So that we can:

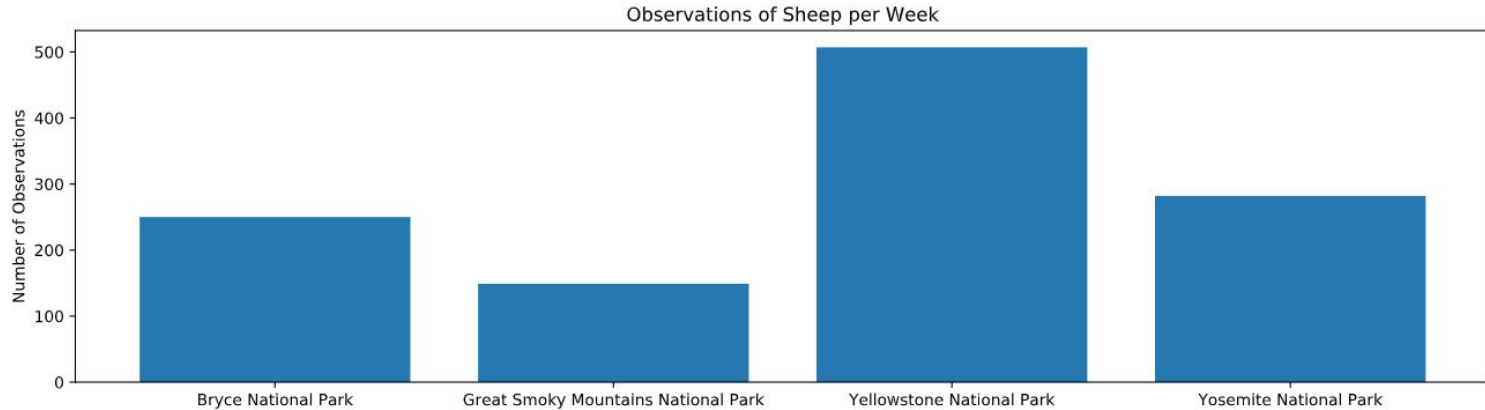**We collected observational data from:**

Yellowstone

Yosemite

Great Smoky Mountains

Bryce

- The sheep population in each park.

- Make better decisions about how and where to study this group of animals...
  - Including the appropriate sample sizes for any given study

Results from our Observational Data

We found Yellowstone Park had by far the most sheep sightings.

Results from our Observational Data

Foot and Mouth Disease

Has Yellowstone's program to reduce the rate of foot and mouth disease been successful?

We won't know unless we have the appropriate sample size.

What we know:
- Last year Bryce Park had a 15% rate of foot and mouth disease among its sheep population

What we found:
- In order to detect with precision the successful results we'd like to see, Yellowstone would have to collect a sample of 870 sheep...

- Which translates to just under two weeks of observational data collection

- For purposes of comparison, to ascertain its foot and mouth rate, Bryce National Park would have to collect for just under a month (3.5 weeks)

Conclusions

- We know the overwhelming number of species are not in immediate or foreseeable danger.

- We know that the classes of mammals and birds demand our vigilance.

- We know that Yellowstone is a great place to study sheep, because it has the most of any national park.

- And in particular, we know how much data we need to collect in order to know whether Yellowstone's foot and mouth disease reduction program is working.

And we hope it is!