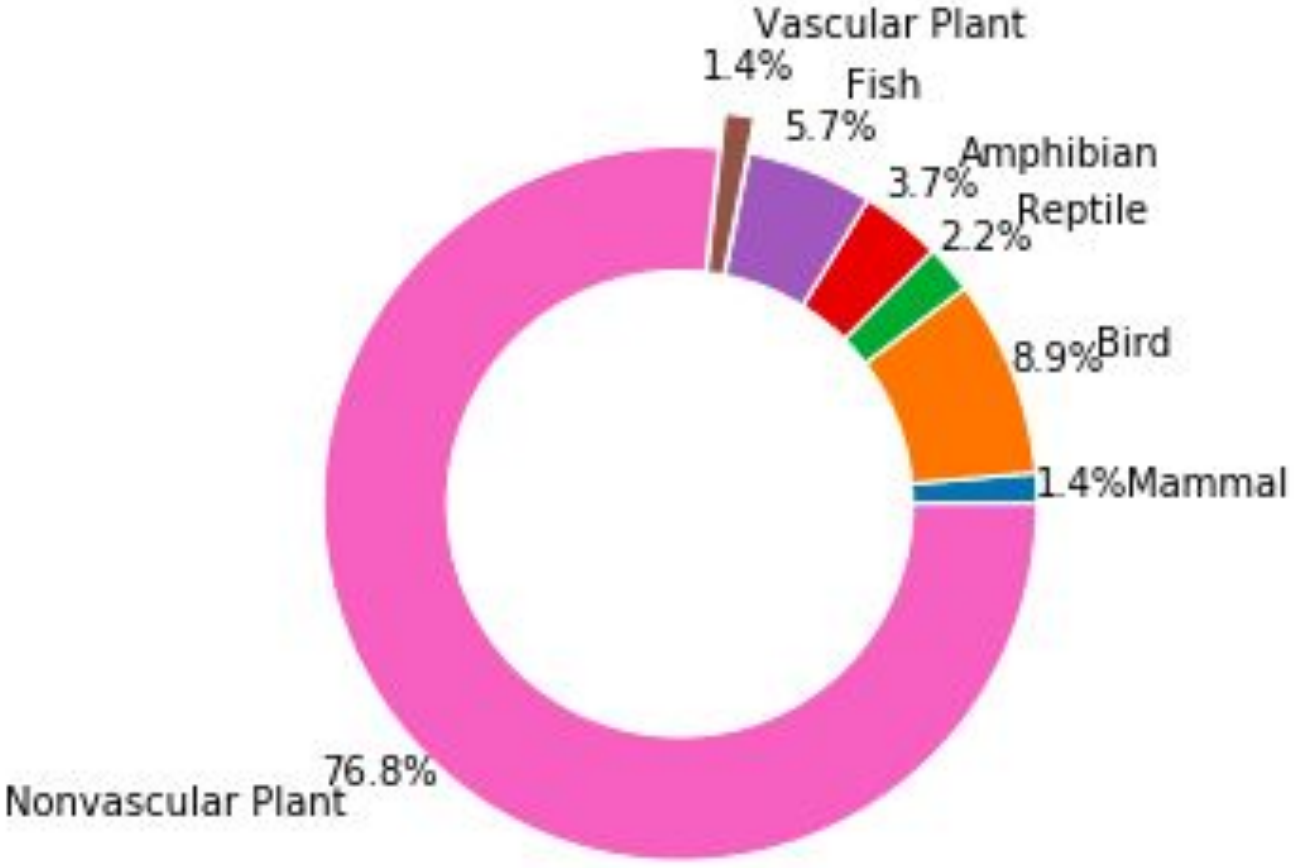
Biodiversity in our National Parks

5541 unique species

Distributed over seven categories


Vascular Plant
1.4%
Fish
5.7%
Amphibian
3.7%
Reptile
2.2%
Bird
8.9%
Mammal
1.4%
Nonvascular Plant
76.8%

Five different conservation statuses

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

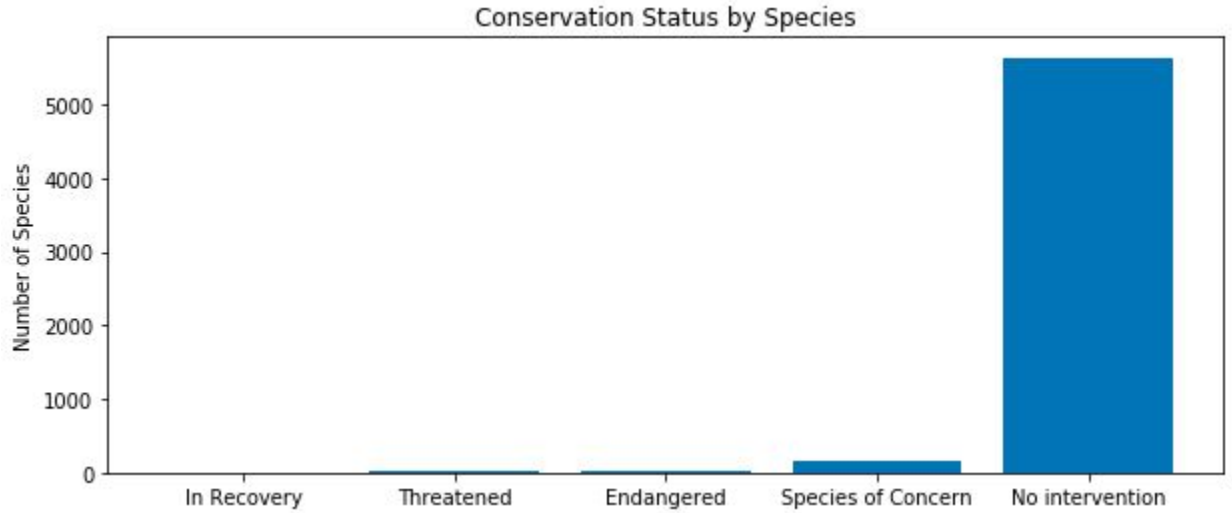
In Recovery

Formerly Endangered, but currently neither in danger of extinction throughout all or a significant portion of its range

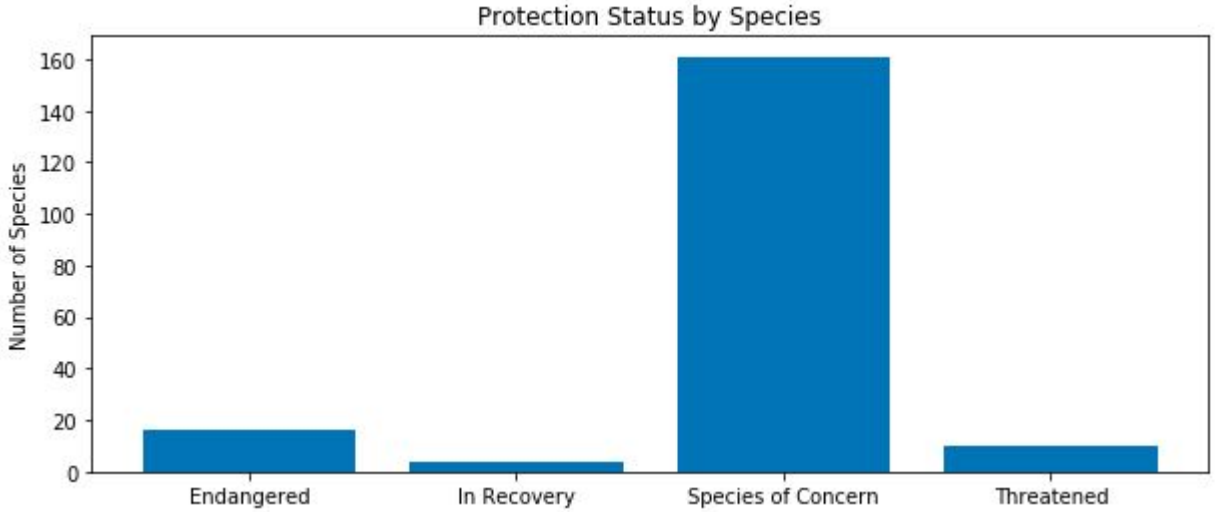
No Intervention

Not in need of protection

Luckily, the largest amount of species (96,7%) are not in need of protection

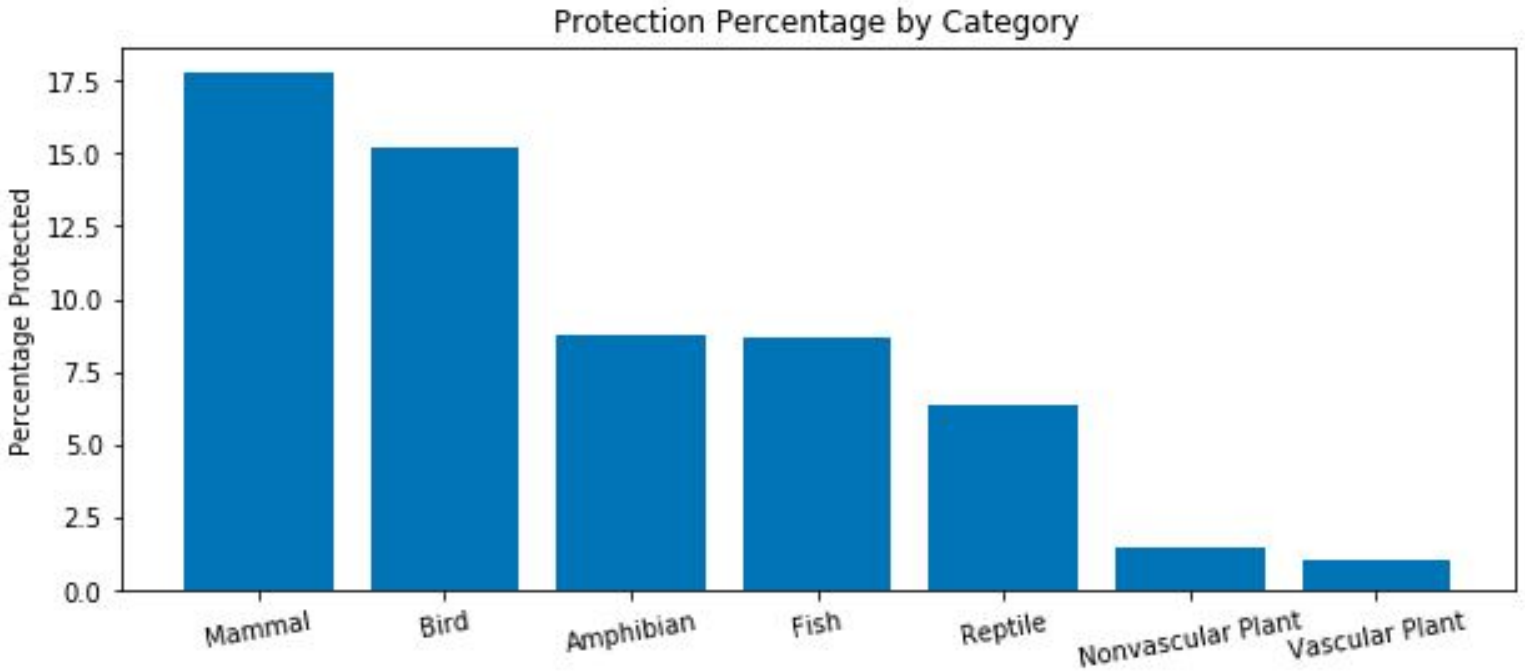


Regarding the species needing protection, resources should be focused on the categories “Endangered” and “Threatened“. While also making sure the “Species of Concern” does not increase.



Are certain types of species more likely to be endangered?

Categories Mammals and Birds are most likely to be endangered



But can we be certain that Mammals have a higher probability than Birds to be endangered just from looking at the percentages?

With the help of a chi squared test we can find out if the difference is significant.

We perform the test with the help of a contingency table

Category	**protected**	**not protected**
Mammal	38	176
Bird	79	442

The results show us that the difference is not significant

Which means we cannot draw the conclusion that Mammals are more likely to be endangered than Birds

How about the difference between two other categories of species?

Is there a significance in the difference between Reptiles and Mammals?

Category	**protected**	**not protected**
Reptile	5	74
Mammal	38	176

The result from the chi squared test show us that the difference is significant

Which means we can draw the conclusion that Mammals are more likely to be endangered than Reptiles

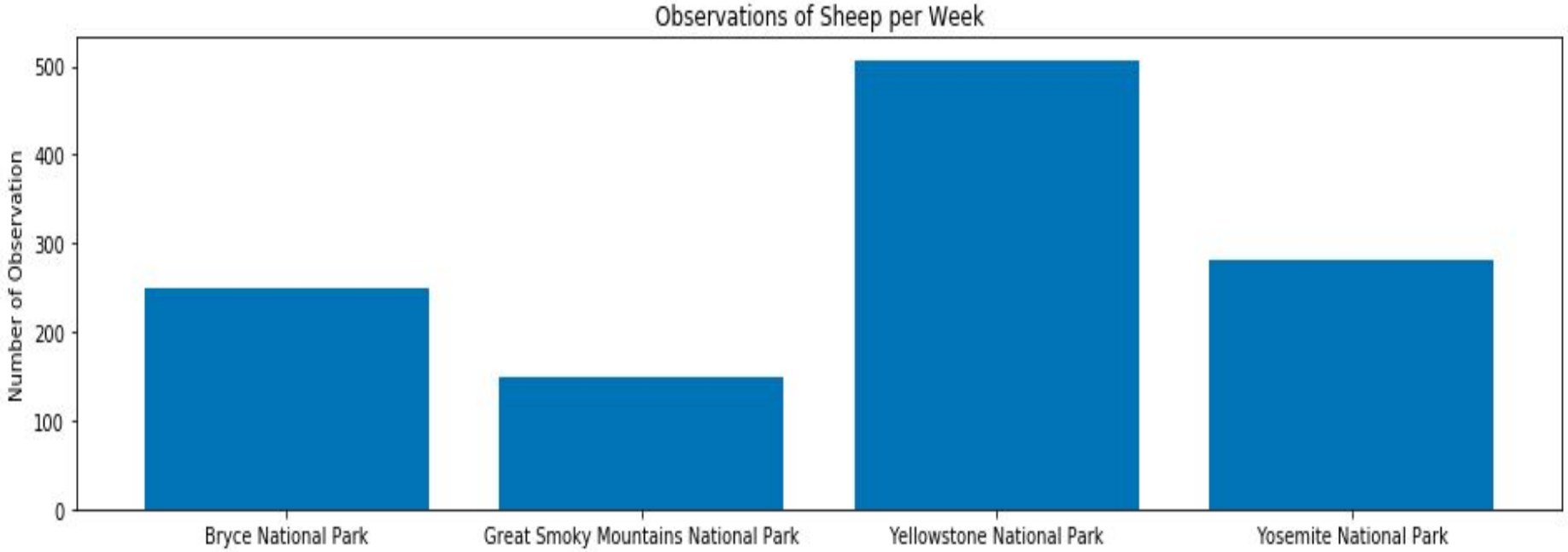
Main conclusions from the significance tests

- Conservationists should focus their preservation efforts equally on Birds and Mammals, since they have the highest probability of being endangered

- The biodiversity on land is under higher threat than the biodiversity in lakes and waterways - Land and forest based animals should be prioritized

Scientists want to keep track of the development of foot and mouth disease among sheep and the success of a program to prevent it

In order to test the effects of the program they need a sufficient sample size of sheep observations to establish a significant result. How many weeks would they need to observe sheep?


Observations of Sheep per Week
Number of Observation
0
100
200
300
400
500
Bryce National Park
Great Smoky Mountains National Park
Yellowstone National Park
Yosemite National Park

Scientists want to detect reductions in the decease of at least 5 percentage points with a level of significance of 90%

The Codeacademy sample size calculator gives us a sample size of 870. Which means that it would take 3,5 weeks in Bryce and 1,7 weeks in Yellowstone to reach the right amount of observations.