Biodiversity

Introduction

Biodiveristy was a project carried out by the National Park Service, wherein they are analysing data on endangered species from several National Parks. The intention of the analyses was to determine if there were any patterns amongst the species.

The data included numerous data entries, such as the scientific names of various species, their common names, different classes (i.e. mammal and bird), the numbers of observations and parks.

The thing that most interested me, was how limited the normal names were to delineate different species, the sheep exercise being a great example of this.

Hypothesis Test 1

H_1: There **is a significant difference** in the conservation status of birds and mammals

H_0: There **is not a significant difference** in the conservation status of birds and mammals

Test Results

P-value = .6876 < .05 Fail to reject H_0

Test Rationale - Chi^2 tests are useful when we want to test for differences between two categorical datasets; birds and mammals.

Hypothesis Test 2

H_1: There **is a significant difference** in the conservation status of reptiles and mammals

H_0: There **is not a significant difference** in the conservation status of reptiles and mammals

Test Results

P-value = .0384 < .05 Reject H_0

Test Rationale - Chi^2 tests are useful when we want to test for differences between two categorical datasets; reptiles and mammals.

Recommendations

According to Hypothesis Test 1, there is not a statistically significant difference in proportional urgency regarding the conservation of birds and mammals. From the data this is expected as the percent protected for each class is relatively similar at 15.37% and 17.05% respectively.

According to Hypothesis Test 2 there is a statistically significant difference in proportional urgency regarding the conservation of mammals and reptiles. From the data this is expected as the percent protected for each class is relatively different at 17.05% and 6.41% respectively.

From these tests we recommend dedicating greater conservational capital towards the classes with the greater percent protected. For example, the National Park Service should primarily prioritise protecting at risk mammals.

Foot and mouth sample size determination

Baseline conversation rate	15%
Minimum detectable effect	5%
Statistical significance	90%
Sample size	1,188
Number of weeks	29.46

Fig.1

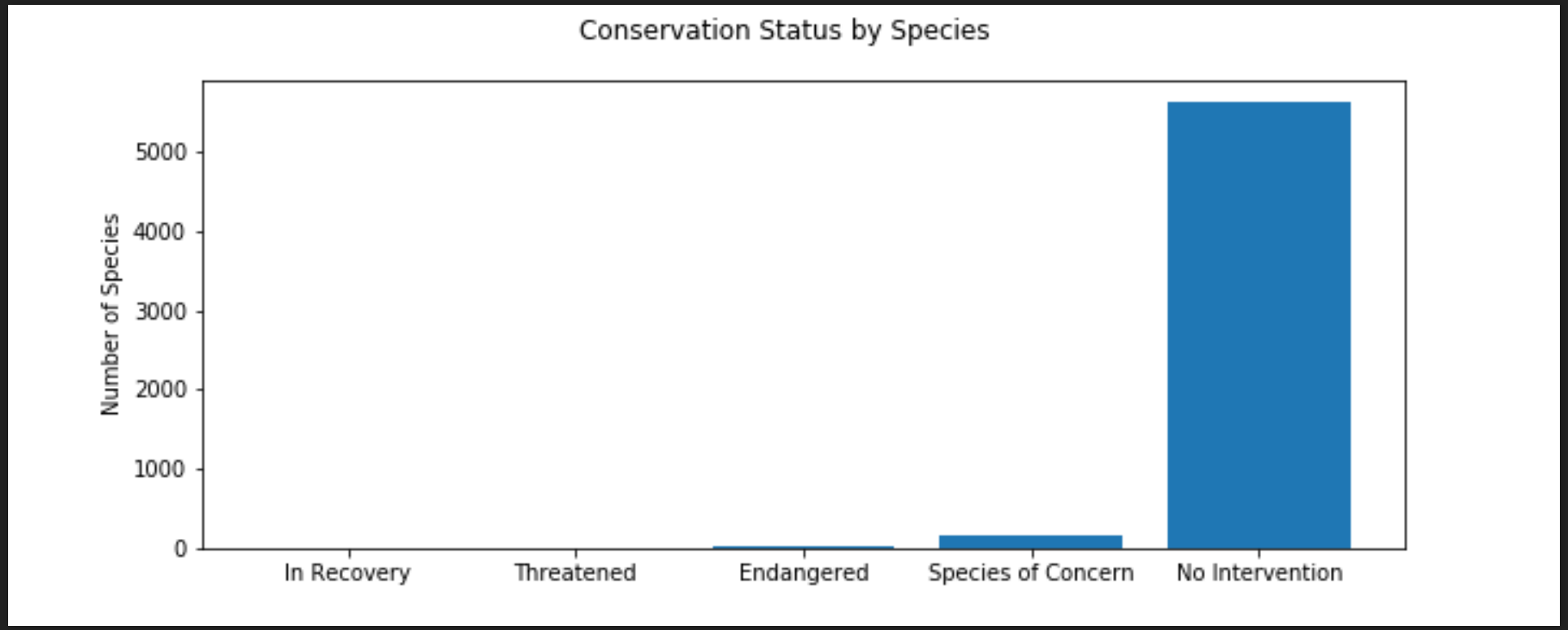
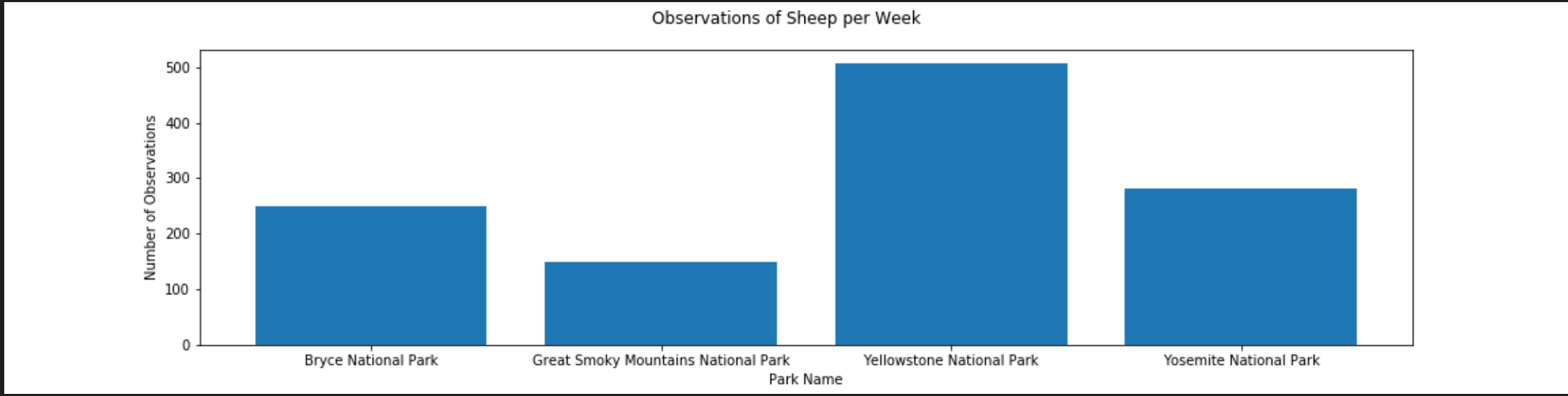

Conservation Status by Species
Number of Species
5000
4000
3000
2000
1000
0
In Recovery
Threatened
Endangered
Species of Concern
No Intervention

Fig.2


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

Conclusion

The National Park Service's analysis showed a statistically significant difference in the proportional urgency of conservation between reptiles and mammals but not birds and mammals.

The data would suggest that conservation efforts should be prioritised toward mammals, birds, then amphibians.

The graphs show that the majority of species in the parks are not protected by any conservation effort and Yellowstone National Park was the site with the highest frequency of sheep observations.

The End

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