Analysis of Biodiversity of National Parks

By Carrie Brown

In this study, the conservation status of 5,543 species in national parks are analyzed. These species are divided into seven different categories and five different conservation statuses.

Species Categories:

Mammal

Bird

Reptile

Amphibian

Fish

Vascular Plant

Nonvascular Plant

Conservation Statuses:

Endangered

In Recovery

Species of Concern

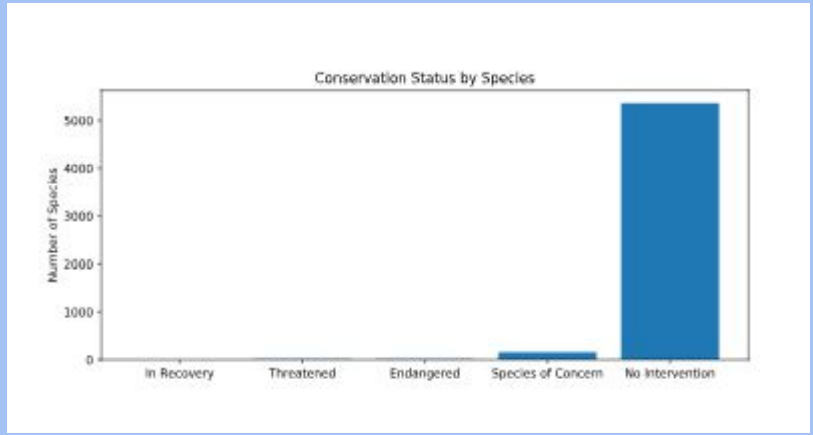
Threatened

No Intervention

Conservation Status of Species

Of the 5,543 species examined, 180 require some level of conservation protection.

	Conservation Status	Number of Species
1	In Recovery	4
4	Threatened	10
0	Endangered	15
3	Species of Concern	151
2	No Intervention	5363



Additional Considerations

Are there significant differences in the conservation status of species by category?

If so, what does this mean to conservationists?

Protection Status by Category

category	not_protected	protected	percent_protected
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

Are mammals more endangered than birds?

To answer this question, a Chi-Square test was performed with the null hypothesis that there is no significant difference in the endangered status of mammals and birds.

This Chi-Square test returned a p-value of ~.688 indicating close to a 69% chance the null hypothesis is true. Based on this result, there is no significant difference found in the endangered status of birds and mammals.

Are mammals more endangered than reptiles?

Again a Chi-Square test is used, with a null hypothesis that there is no significant difference in the endangered status of mammals and reptiles.

This Chi-Square test returned a p-value of ~.038 indicating a 3.8% chance the null hypothesis is true. Based on this result, the null hypothesis is rejected. The data shows a significant difference in the endangered status of mammals and reptiles.

Conclusion

Based on the results of these tests, conservationists should consider species category when developing conservation plans.

Testing for Reduction of Foot and Mouth Disease in Sheep

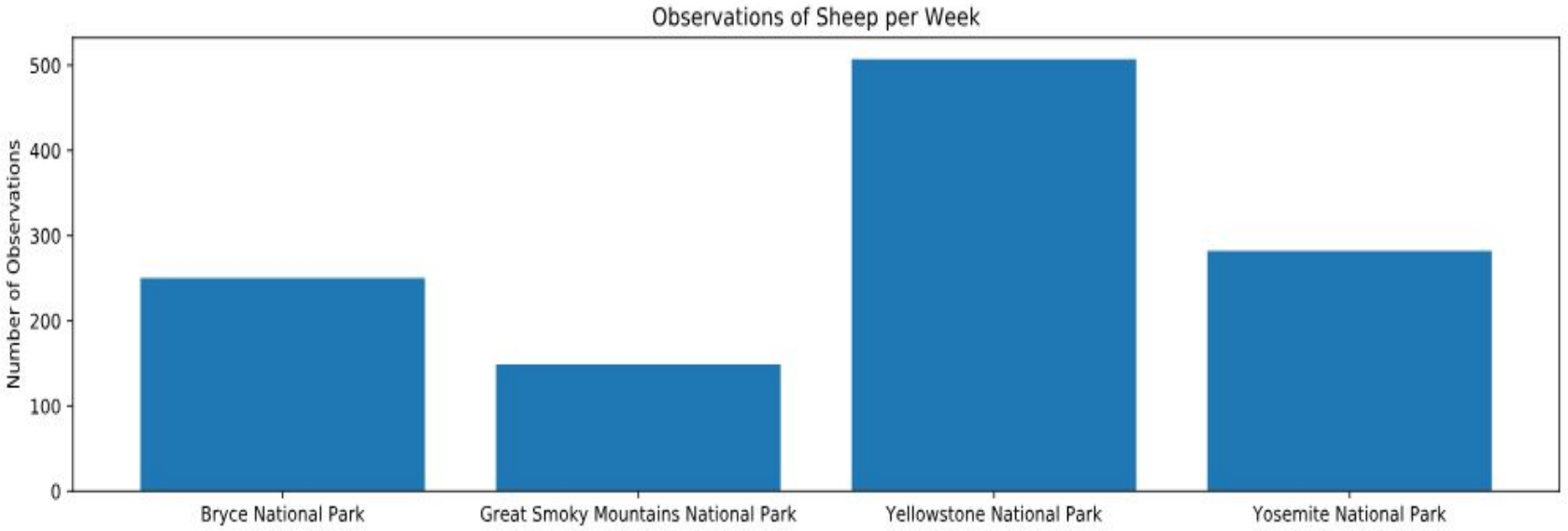
The remaining slides focus on the testing for reduction of foot and mouth disease in sheep. To determine how many weeks of observation per park is required to test for a reduction in foot and mouth disease from 15% to 10%, the following steps will be taken.

Review weekly observations of sheep for each park.

Calculate test sample size.

Calculate weeks of observation per park.

Observations of Sheep by Park



Weeks of Observation per Park

Using a baseline of 15%, a minimum detectable effect of 33% ((15-10)/15) and a statistical significance of 90%, the calculated sample size is 890.

This requires the following weeks of observation:

Yellowstone National Park - 1.75 weeks

Bryce Canyon National Park - 3.56 weeks