Biodiversity for the National Parks

Codecademy Data Analysis Capstone Project

By: Anne Wachtor

The Question

Are certain types of species more likely to be endangered?

Total Species Conservation Statuses:

As seen in the chart, the National Park Service currently observes 5543 different plants and animals. The Service monitors the status of each species and categorizes it as follows:

- **Endangered** - at risk for extinction
- **Threatened** - at risk to become endangered
- **Species of Concern** - at risk to become threatened
- **No Intervention** - not at risk
- **In Recovery** - had been endangered, but is not anymore

Conservation Status	Number of Species
Endangered	15
In Recovery	4
No Intervention	5363
Species of Concern	151
Threatened	10
Total	5543

Types of Species with Protection Statuses

As seen below, the following is the raw data of how many of each species is protected or not.

This data is used in order to run chi-squared tests to find out whether or not more protection is needed for that species.

This researcher compared animals within their individual category and plants as separate tests.

	Mammal	Bird	Reptile	Amphibian	Fish	Vascular Plant	Nonvascular Plant	Totals
Protected	30	75	5	7	11	47	5	180
Not Protected	146	413	73	72	115	4216	328	5363
							Total	5543

Calculations

Chi-Squared tests were run on different categories in order to determine if there is a significant (pval≤0.05) difference between which animals need to be protected or if the differences happen strictly by chance.

Animals:

When comparing reptiles and mammals, there was a significant difference (pval=0.038).

There was no significant difference (pval=0.687) when comparing mammals and birds.

Plants:

This data set only provided two categories of plants (vascular and nonvascular). The chi-squared test showed that there was no significant difference (pval=0.662) between the categories.

Recommendations

Concerning Animals

After running chi-squared tests, it appears that the only statistically significant animal is between the mammal and bird populations. This suggests that certain animals are at a higher risk and require more help.

With this information, it is the recommendation of this researcher that more resources be allocated to the protection of **mammals** and research into the causes of their endangerment.

Concerning Plants

Between vascular and nonvascular plants, there is no statistical significance between them.
(pval=0.66 which is much higher than the accepted pval≤0.05)

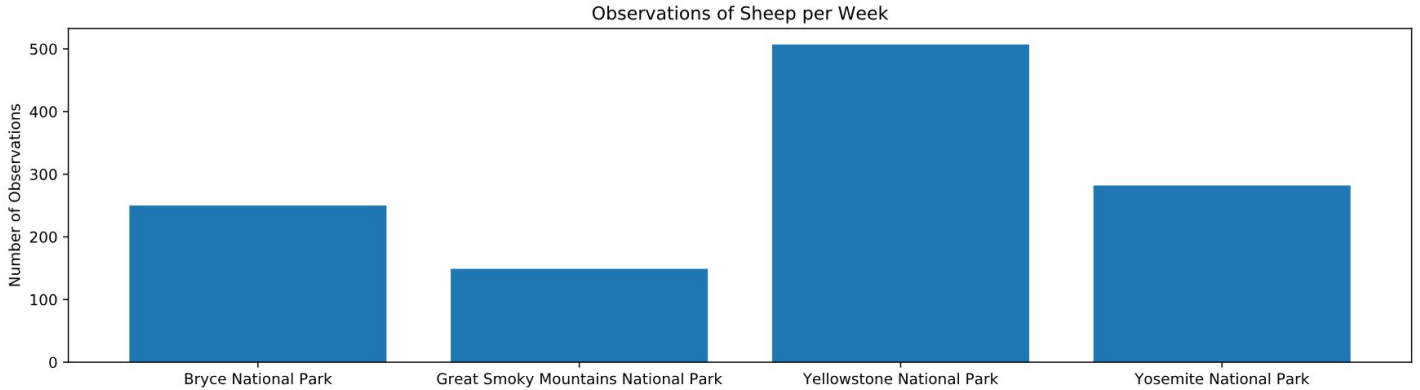
This means that neither of these types of plants are more or less likely to be endangered.

Foot and Mouth Reduction Effort

Yellowstone and Bryce

Yellowstone rangers can see a significant drop (more than 5%) in sheep with foot and mouth disease in two and a half weeks when observing 870 sheep.

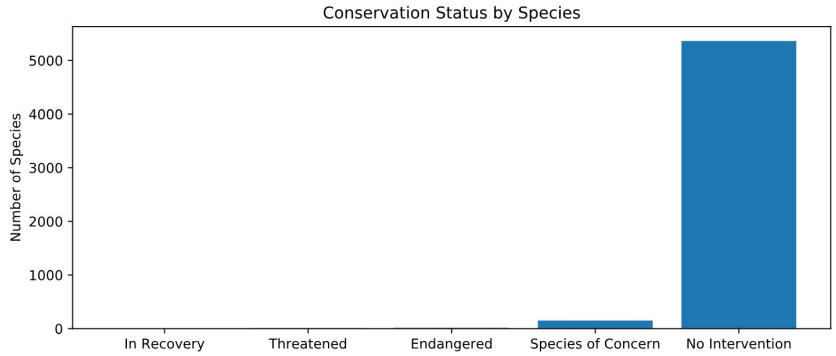
However, **Bryce** rangers will require three weeks to see the necessary 870 sheep. This is due to the differing number of sheep observations in each park per week.



Appendix: Visuals

Information Concerning Conversion Status

Conservation Status	Number of Species
Endangered	15
In Recovery	4
No Intervention	5363
Species of Concern	151
Threatened	10
Total	5543



	Mammal	Bird	Reptile	Amphibian	Fish	Vascular Plant	Nonvascular Plant	Totals
Protected	30	75	5	7	11	47	5	180
Not Protected	146	413	73	72	115	4216	328	5363
							Total	5543

Sheep Observations per Week