Capstone Project: Biodiversity Investigating Protected Species

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In this presentation we will be looking at different species in the National Parks to see if they are in fear of endangerment or if no intervention is needed based on a few tests.

We will also be looking at the cause and effect of foot and mouth disease for Sheep in Yellowstone National park

	category	scientific_name	common_names	conservation_status
0	Mammal	Clethrionomys gapperi gapperi	Gapper's Red-Backed Vole	nan
1	Mammal	Bos bison	American Bison, Bison	nan
2	Mammal	Bos taurus	Aurochs, Aurochs, Domestic Cattle (Feral), Domesticated Cattle	nan
3	Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	nan
4	Mammal	Cervus elaphus	Wapiti Or Elk	nan

	conservation_status	scientific_name
0	Endangered	15
1	In Recovery	4
2	Species of Concern	151
3	Threatened	10

Different Levels of Protected Species:

Endangered : 15

Meaning : Seriously at risk of extinction

In Recovery : 4

Meaning: Formerly Endangerd, but currently not in danger of extinction

Species of Concern : **151**

Meaning: Declining population or appears to be in need of conservation

Threatened : 10

Meaning: Vulnerable to endangerment in the near future.

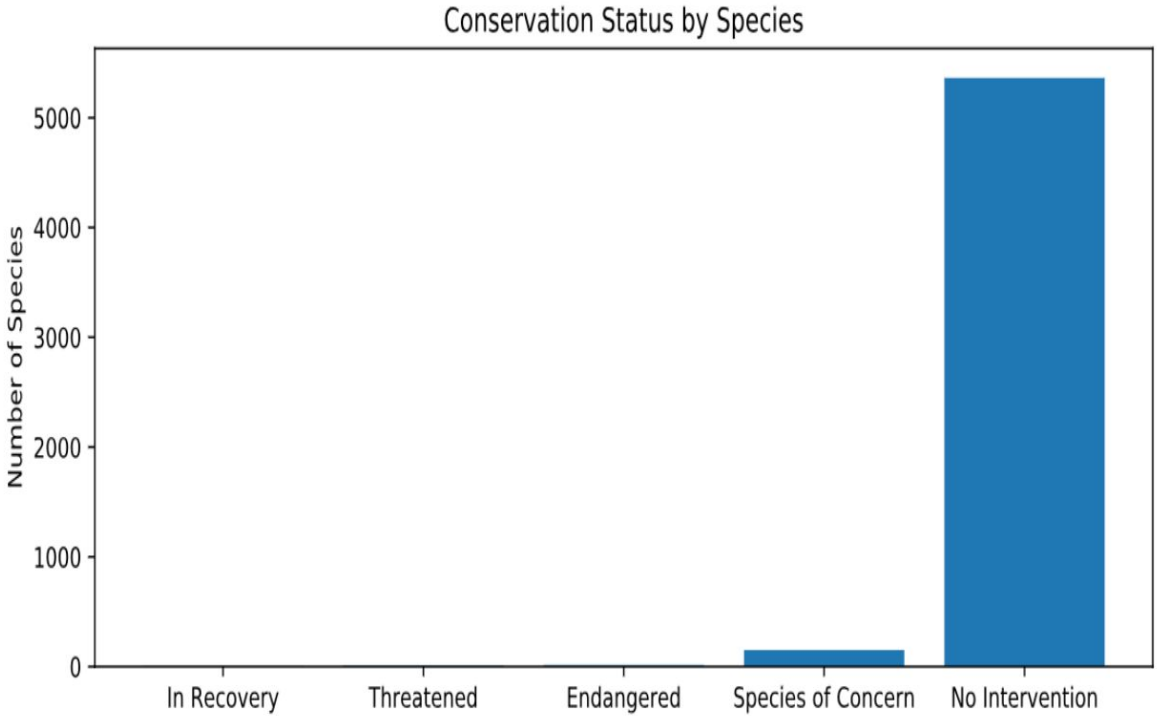
Different Species and if they are protected or not:

	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

What does that mean for a lot of animals:

Having 151 different species in the concerned area of either declining or needed conservation we need to look closer at what we can do to help prevent extension before it gets to a threatened level and lose these animals for good.

There is a p-value of 0.38 when comparing reptiles and mammals to see if there is a significance in seeing if some species are more likely to be endangered than others.


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

Recommendations for conservationist :

Mammals are more like to be endangered then Birds but there is a 0.68 p-value so according to a chi squared test there is more of a random chance rather than a scientific chance.

But when looking at Reptiles and Mammals it is more than a random chance to see they are more likely to be endangered. This having a p-value of 0.38.

Most animals in this study don’t need any intervention since they don’t have a high enough scientific significance to intervene.

Foot and Mouth Study:

	scientific_name	park_name	observations	category	common_names	conservation_status	is_protected	is_sheep
0	Ovis canadensis	Yellowstone National Park	219	Mammal	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True
1	Ovis canadensis	Bryce National Park	109	Mammal	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True
2	Ovis canadensis	Yosemite National Park	117	Mammal	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True
3	Ovis canadensis	Great Smoky Mountains National Park	48	Mammal	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True
4	Ovis canadensis sierrae	Yellowstone National Park	67	Mammal	Sierra Nevada Bighorn Sheep	Endangered	True	True

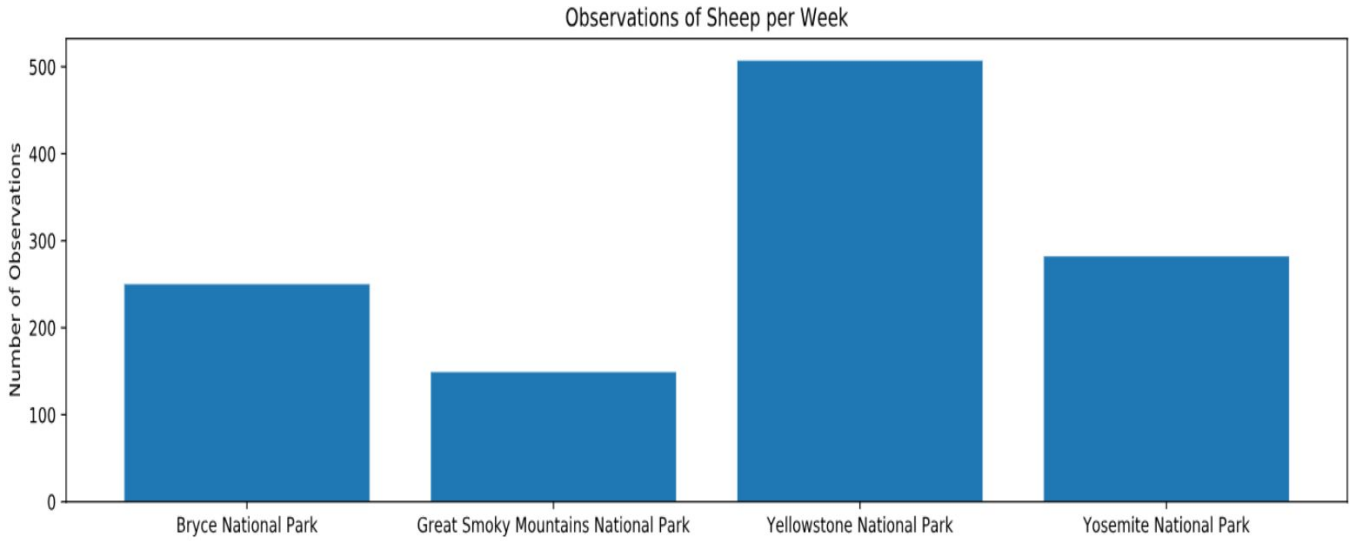
	park_name	observations
0	Bryce National Park	250
1	Great Smoky Mountains National Park	149
2	Yellowstone National Park	507
3	Yosemite National Park	282

Foot and Mouth Reduction Study:

Yellow Stone National park had the largest number of sheep to be able to observe so we will be looking at that park.

Then we want to see how long we will need to study the sheep in this are to help reduce the foot and mouth disease. We would need to observe 870 sheep roughly and would be able to do this in roughly a week. This will give us a statistical significance of 90%.

We could also look at Bryce national park but it would take us roughly 2 weeks to observe that many sheep if needed.


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

Thank you for your time and consideration for this study.

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