

Biodiversity for the National Parks

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Cory Knepper

Agenda

- Data Sources
 - Species Info
 - Observations
- Protection Status Test
- Recommendation
- Sheep Mouth and Foot Disease Sample Size Determination
- Observation Period Determination

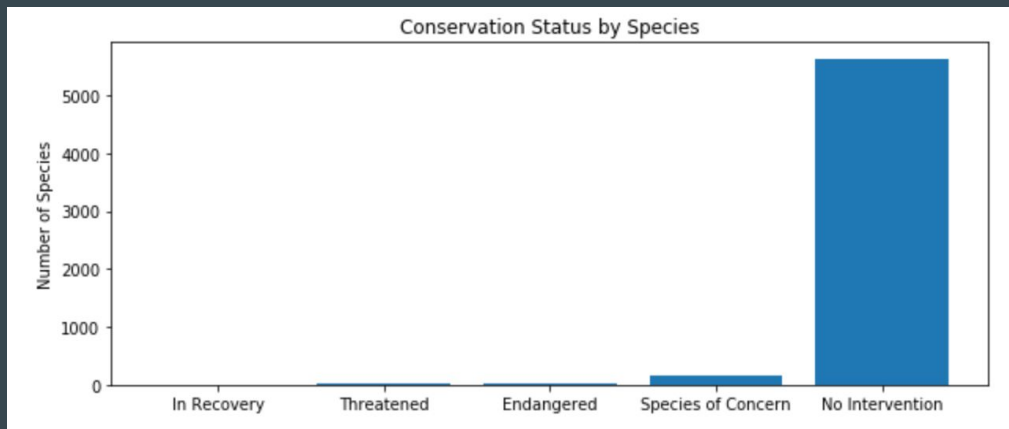
Data Source - National Park Services

- Species Info
 - Animal Category
 - Scientific Name
 - Common Name
 - Conservation Status

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

Data Source - National Park Services

- Species Info



Conservation Status	Number of Species
In Recovery	4
Threatened	10
Endangered	16
Species of Concern	161
No Intervention	5633

Data Source - National Park Services

- Observations
 - Scientific Name
 - Park Name
 - Observations

	scientific_name	park_name	observations
0	Vicia benghalensis	Great Smoky Mountains National Park	68
1	Neovison vison	Great Smoky Mountains National Park	77
2	Prunus subcordata	Yosemite National Park	138
3	Abutilon theophrasti	Bryce National Park	84
4	Githopsis specularioides	Great Smoky Mountains National Park	85

Are certain categories of species more protected than others?

- At risk/protected species are species that are receiving some type of intervention
 - Examples: Endangered, In Recovery, Species of Concern, and Threatened

Category	Percent Protected
Mammal	17.8%
Bird	15.2%
Amphibian	8.8%
Fish	8.7%
Reptile	6.3%
Nonvascular Plant	1.5%
Vascular Plant	1.0%

Are certain categories of species more protected than others?

- Chi Square Test to determine statistical significance
- Mammal vs. Bird
 - P-value = 0.4459
 - Not statistically significant in protection status
- Mammal vs. Reptile
 - P-value = 0.0234
 - Statistically significant in protection status

Recommendation

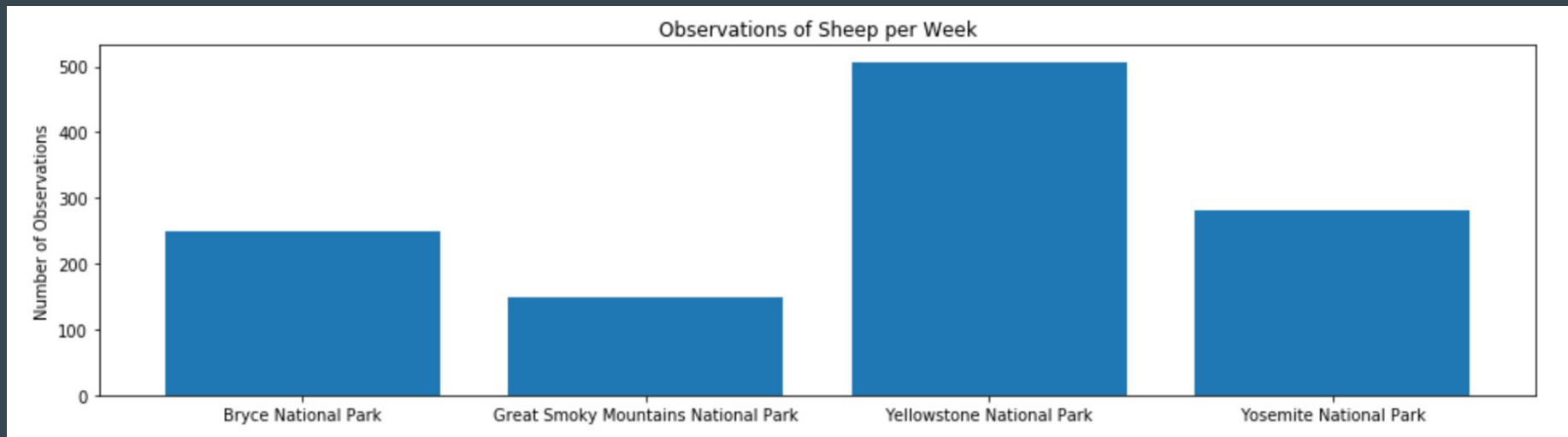
- Mammals species currently have more species in protection status compared to Reptile species
 - More resources should be dedicated towards mammals than reptiles, if not already
- Birds and Mammals have similar number of species at risk
 - A comparable amount of resources should be dedicated to both species

Sheep Foot and Mouth Disease Sample Size

- Bryce National Park - 15% of Sheep have Foot and Mouth Disease
- Goal: Decrease Foot and Mouth Disease occurrences by 5 percentage points
- Sample Size Calculator - Optimizely
 - Baseline Conversion = 15%
 - Minimal Detectable Effect = 33%
 - Level of Significance = 90%
- Sample Size = 520

Observation Period

- Bryce National Park - ~1.8 weeks of observations
- Yellowstone National Park - ~1 week of observations



Thank You!
Any Questions?