

Biodiversity Capstone Project

Investigating Protected Species

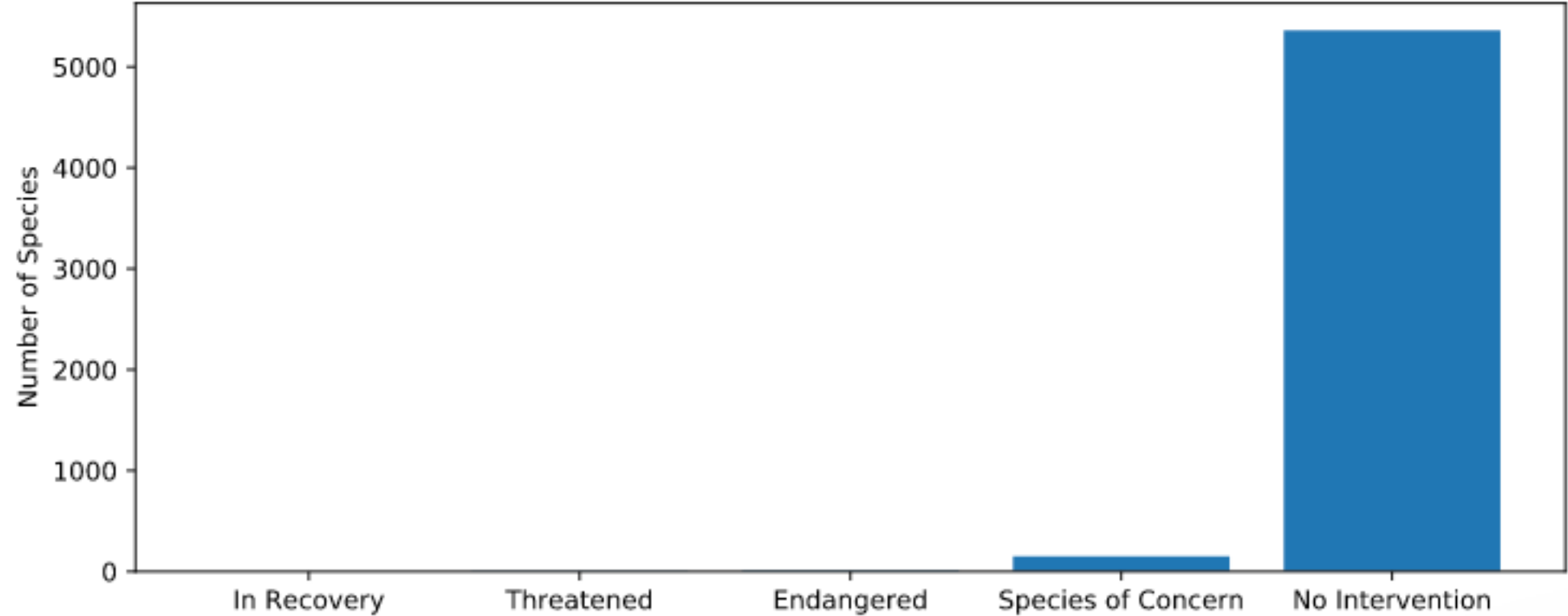
Available Data:

- species_info.csv
 - For each species:
 - Category to which it belongs (Mammal, Vascular plant, etc.)
 - Scientific name
 - Common name
 - Conservation status
- observations.csv
 - For each species:
 - Scientific name
 - Park where it was observed
 - Number of observations

Conservation Status

96% of species surveyed have no conservation status

Conservation Status by Species



	conservation_status	scientific_name
1	In Recovery	4
4	Threatened	10
0	Endangered	15
3	Species of Concern	151
2	No Intervention	5363

Chi-Squared Tests for significance of differential protection

category	not_protected	protected	percent_protected
Amphibian	73	7	0.087500
Bird	442	79	0.151631
Fish	116	11	0.086614
Mammal	176	38	0.177570
Nonvascular Plant	328	5	0.015015
Reptile	74	5	0.063291
Vascular Plant	4424	46	0.010291

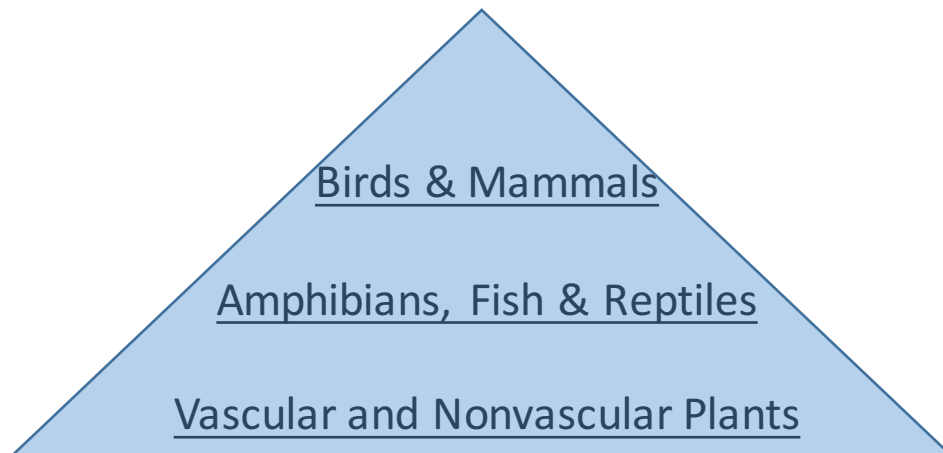
Do the differences in protection
have some foundation in
ecological health?

If not why not?

P-values

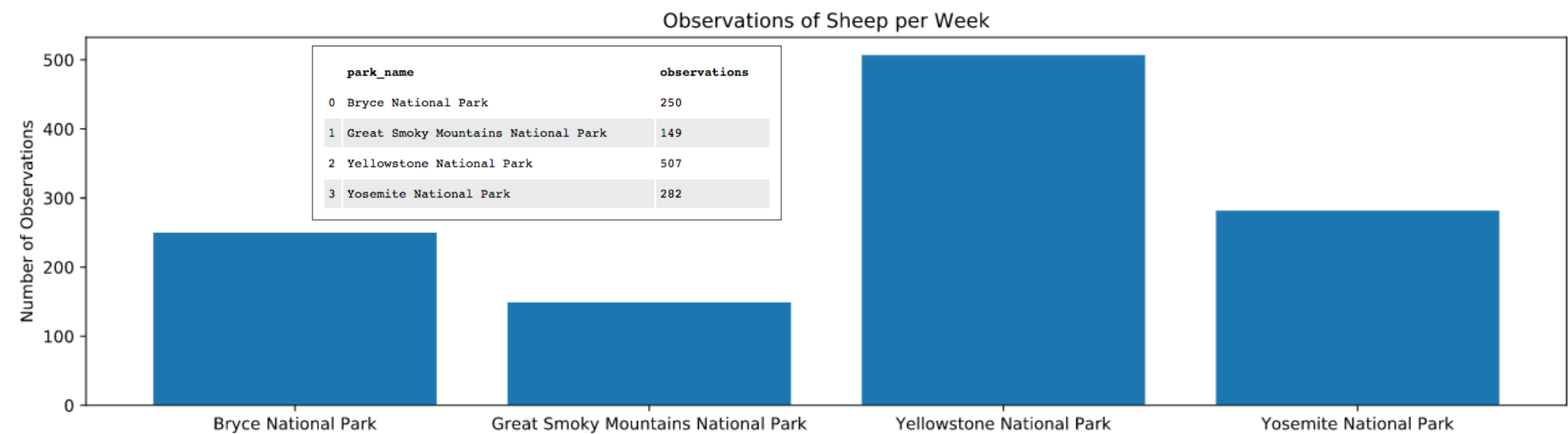
All species	5.51082804731e-89	←
All Animals	0.0312971619317	← significant
Amphibians, Fish, Reptiles & Plants	1.10170539127e-18	←
Birds & Mammals	0.687594809666	←
Amphibians, Fish & Reptiles	0.808062079153	← not significant
Vascular & Nonvascular Plants	0.662341949138	←

Protection Hierarchy



Sheep Species in National Parks

	category	scientific_name	common_names	conservation_status	is_protected	is_sheep	park_name	observations
0	Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	No Intervention	False	True	Yosemite National Park	126
1	Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	No Intervention	False	True	Great Smoky Mountains National Park	76
2	Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	No Intervention	False	True	Bryce National Park	119
3	Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	No Intervention	False	True	Yellowstone National Park	221
4	Mammal	Ovis canadensis	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True	Yellowstone National Park	219
5	Mammal	Ovis canadensis	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True	Bryce National Park	109
6	Mammal	Ovis canadensis	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True	Yosemite National Park	117
7	Mammal	Ovis canadensis	Bighorn Sheep, Bighorn Sheep	Species of Concern	True	True	Great Smoky Mountains National Park	48
8	Mammal	Ovis canadensis sierrae	Sierra Nevada Bighorn Sheep	Endangered	True	True	Yellowstone National Park	67
9	Mammal	Ovis canadensis sierrae	Sierra Nevada Bighorn Sheep	Endangered	True	True	Yosemite National Park	39
10	Mammal	Ovis canadensis sierrae	Sierra Nevada Bighorn Sheep	Endangered	True	True	Bryce National Park	22
11	Mammal	Ovis canadensis sierrae	Sierra Nevada Bighorn Sheep	Endangered	True	True	Great Smoky Mountains National Park	25



Foot and Mouth Reduction Effort

Observation Sample Size Determination

15% population infection rate taken from 2017 Bryce National Park statistics:

Confidence level 90%:

Margin of error of 5% on baseline population percentage of 15%:

Resulting sample size determination of learning environment calculator:

Baseline conversion rate: 15 %
Statistical significance: 85% 90% 95%
Minimum detectable effect: 33.3 %
Sample size: 870

Sheep Observations per Week by Park

	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

Weeks of observation required to meet sample size requirement

