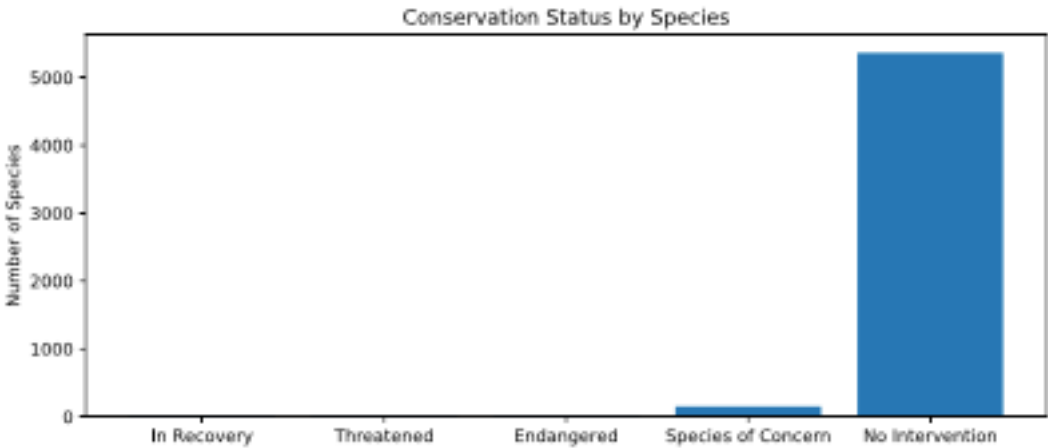


Endangered species in National Park Service

In general, Conservation Status by Species as below. As you can see the majority of the species haven't had any attention.

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



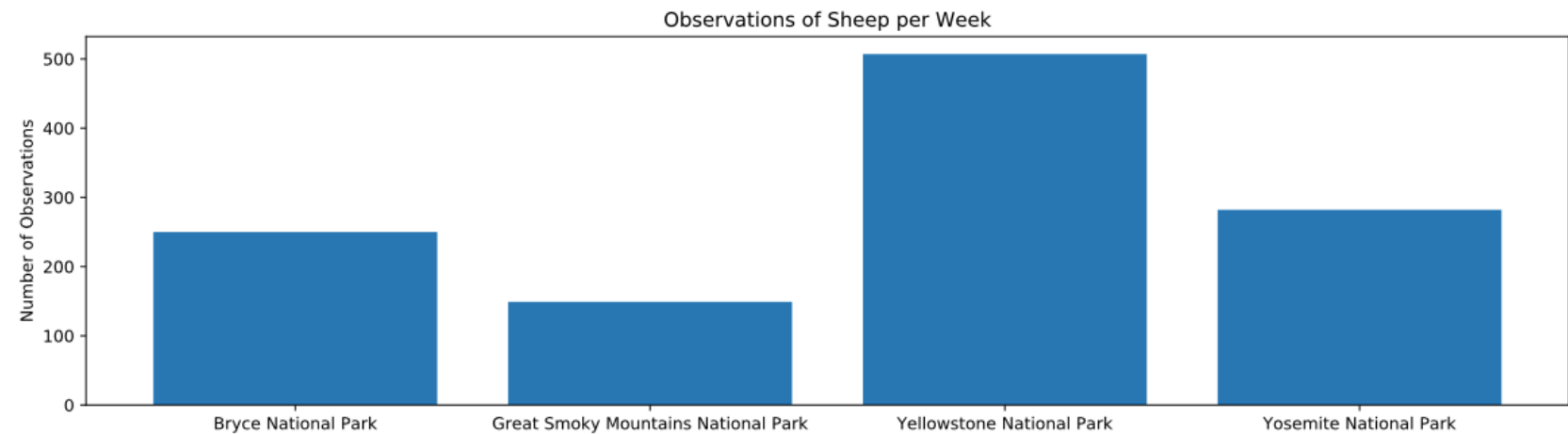
Species more likely to be endangered:

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

As you can see , it looks like there are significant differences that some of the species are more likely to be in danger than the others. By running the Chi-squared test between the mammal and reptile, shows that it is significant difference with a p-value =0.038, however there's no significant difference between mammal and birds.

Hence, the National Park should be aware of that there are species need attention same as the mammals and birds.

Further investigation by observation of sheep in 4 different park per week. The following chart shows the number of sighting at each park per week. As you can see that Yellowstone National Park will be the best place to observe the sheep.



Given a baseline of 15% occurrence of foot and mouth disease in sheep at Bryce National Park last year, that if the scientists wanted to be sure that a >5% drop in observed cases of foot and mouth disease in the sheep at Yellowstone was significant they would have to observe at least 870 sheep. By using the observation data, this would take approximately one week of observing in Yellowstone to see that many sheep, or approximately two weeks in Bryce to see that many sheep.

All the graphs that created in the notebook

	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