

Biodiversity in National Parks

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Data Provided

	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

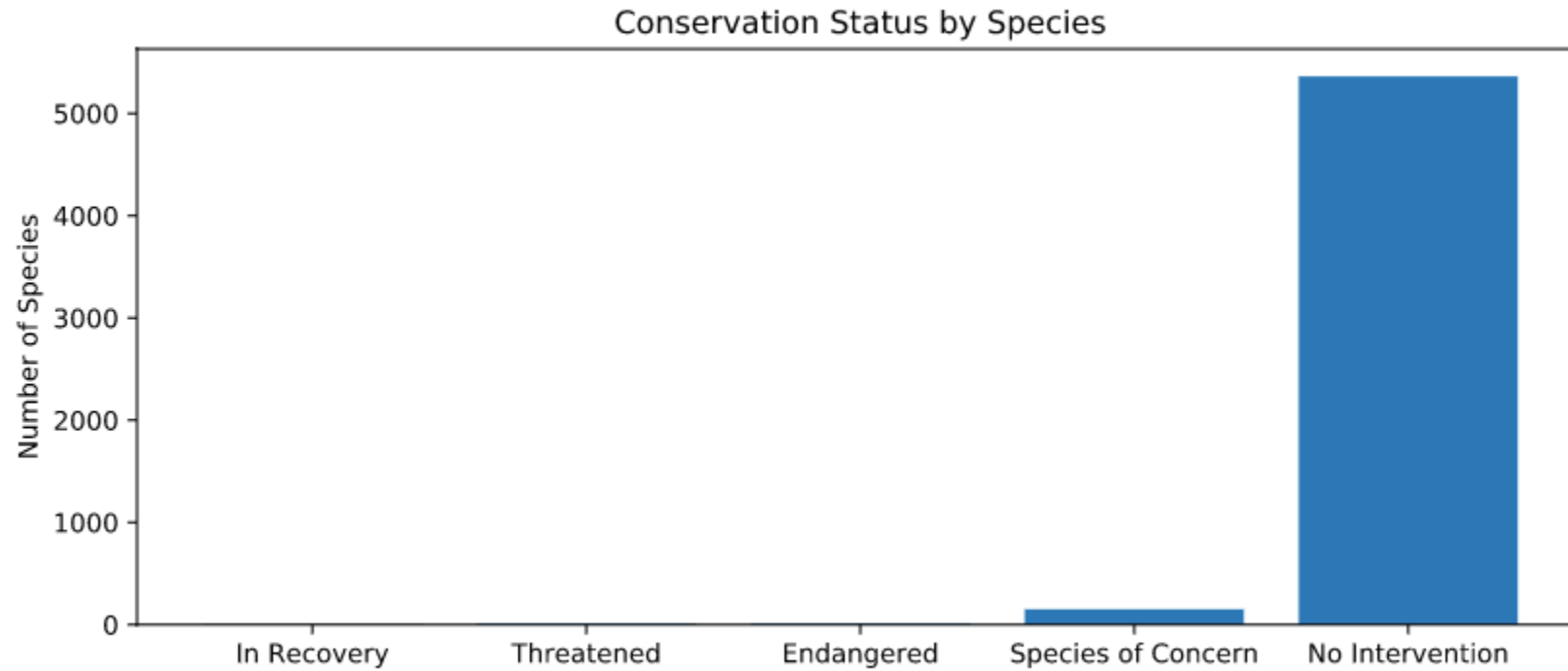
Analyzing the information provided by the National Parks, we were able to look into species by the species category, name and conservation status, a snippet provided above, we were then able to further narrow this data down based on trends within both categories and conservation status.

Conservation Statuses

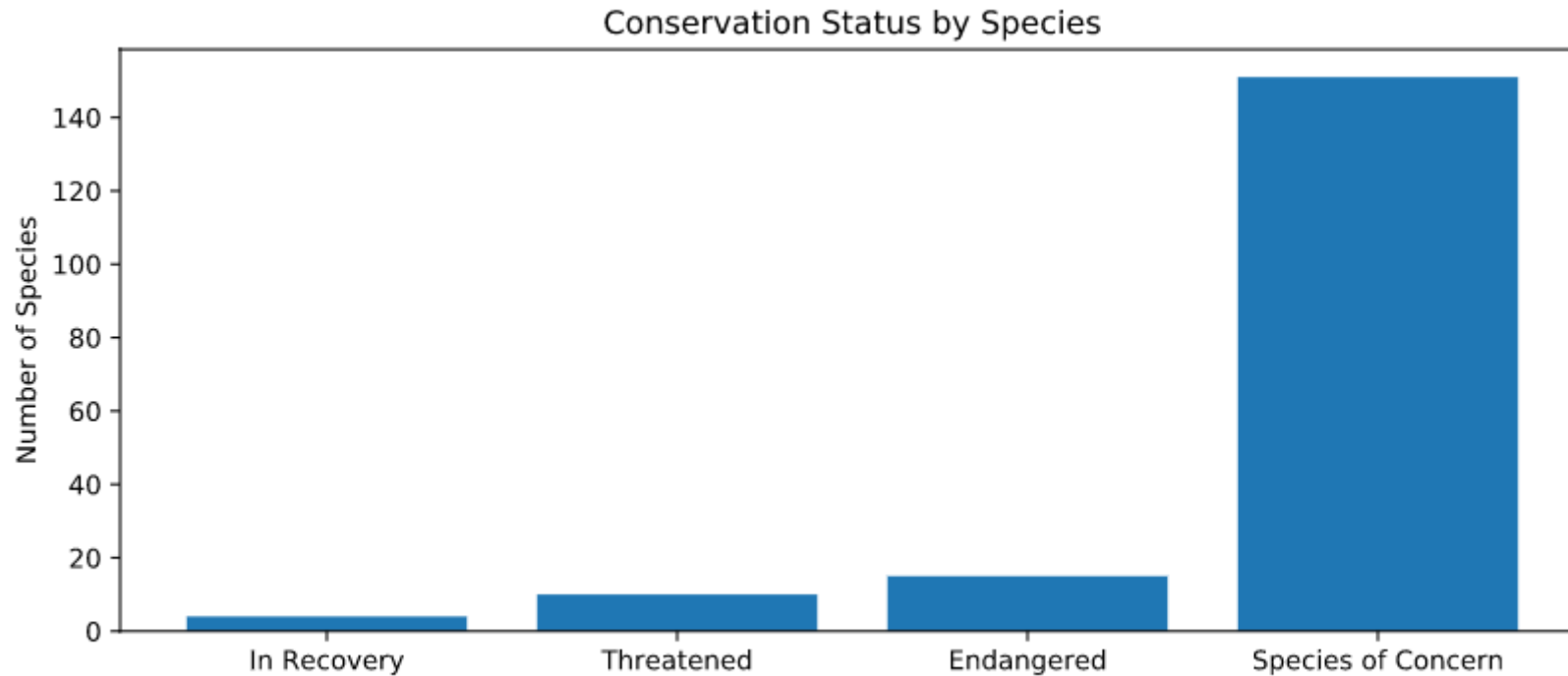
	conservation_status	scientific_name
0	Endangered	15
1	In Recovery	4
2	No Intervention	5363
3	Species of Concern	151
4	Threatened	10

The National Parks harbor 5541 species and the majority of species have no need of monitoring. However, there are species in the National Parks that do require assistance to ensure they continue to be a part of the current diverse ecosystem. While 4 species are In Recovery and 151 are Of Concern, this still requires careful assessment to ensure they do not fall (back) into Threatened or Endangered categories.

Conservation Statuses – Graph



Conservation Statuses – Protected Species



Endangered and Threatened Species

Endangered		
	category	scientific_name
0	Amphibian	1
1	Bird	4
2	Fish	3
3	Mammal	6
4	Vascular Plant	1

Threatened		
	category	scientific_name
0	Amphibian	2
1	Fish	4
2	Mammal	2
3	Vascular Plant	2

While the species that are Endangered and Threatened are a relatively small amount, they are still an important part of the ecosystem. An example would be the Indiana Bat, on the Endangered list, which are native only to North America. Their importance to the system is vital to control insect population, as well as provide a food source for small mammals that eat bats.*

	category	scientific_name	common_names	conservation_status
8	Mammal	Canis lupus	Gray Wolf	Endangered
9	Mammal	Canis rufus	Red Wolf	Endangered
34	Mammal	Myotis grisescens	Gray Myotis	Endangered
39	Mammal	Myotis sodalis	Indiana Bat, Indiana Or Social Myotis	Endangered
72	Mammal	Glaucomys sabrinus coloratus	Carolina Northern Flying Squirrel, Northern Flying Squirrel	Endangered

* http://animaldiversity.org/accounts/Myotis_sodalis/

Significant Calculations

	conservation_status	scientific_name
0	No Intervention	73
1	Species of Concern	5

When comparing protected species by category, the amount ranged anywhere from 1% protected (vascular and non-vascular plants) to 17% protected (mammal). However, researching deeper into this data, Chi-tests were run to see if there was any Significant difference (p-value less than .05) with some categories. Above is the conservation statuses for Reptiles. When running tests for Significance, we did see this with mammals, non-vascular plants and fish, but not with any other category.

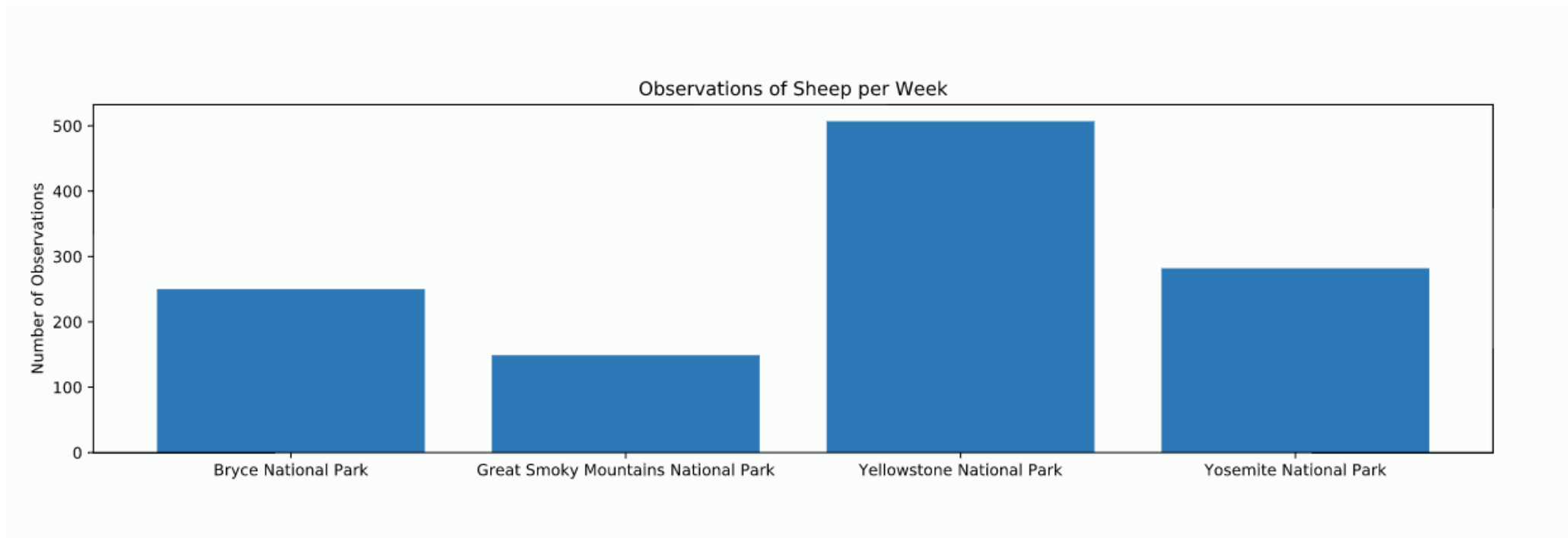
Sheep in the National Parks

	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

In addition to the monitoring of conservation efforts within the National Park system, scientists have also been observing and tracking the movements of sheep within the parks. The information analyzed here also included how many observations of each sheep species was made, as well as which park they were observed in. Over the course of a week, 1188 sheep were observed within 4 National Parks.

	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

Sheep in the National Parks – Cont.



Sheep in the National Parks – Foot & Mouth

Currently scientists are working to track efforts to reduce Foot & Mouth disease amongst the sheep. While at Bryce National Park 15% of sheep have been known to have this disease as of last year, it was requested to provide further information to help determine a proper sample size to ensure we are confident in our numbers regarding this disease amongst the sheep at Yellowstone.

With their provided request of a 90% statistical significance, the baseline above, and the minimum detectable effect of 33% due to the need to observe a change of 5% with confidence of the 15% baseline above, it was determined a sample size of 520 sheep would need to be observed.

Given the numbers of sheep seen in a week provided previously, each location would need to watch for sheep for the below amount of weeks:

Park	Weeks
Bryce National Park	2
Great Smoky Mountains National Park	4
Yellowstone National Park	1
Yosemite National Park	2