

Biodiversity for the National Parks

By Tia Hunt

Investigating Endangered Species

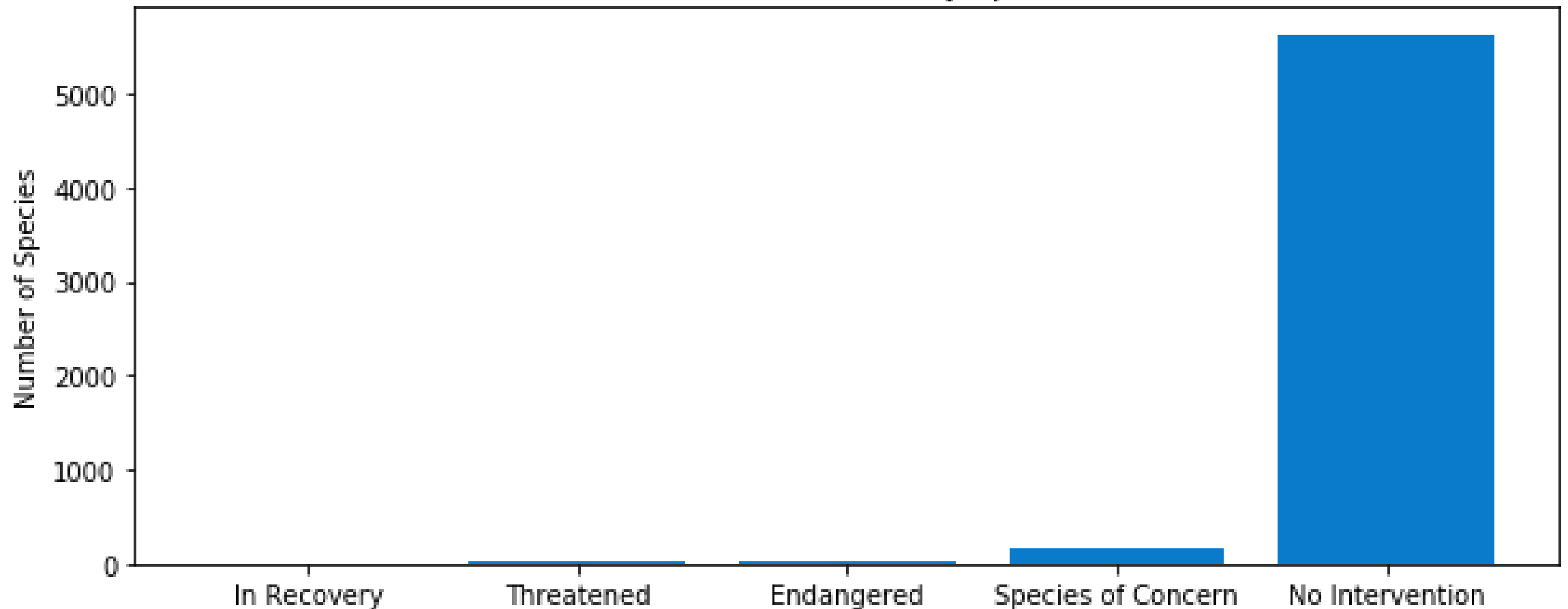
Observations

There are 5824 species in the species list.

Category	No. of species	Percent
Amphibian	80	1.4%
Bird	521	8.9%
Fish	127	2.2%
Mammal	214	3.7%
Nonvascular Plant	333	5.7%
Reptile	79	1.4%
Vascular Plant	4470	76.8%

Conservation Status	No. of species	Percent
Endangered	15	0.3%
In Recovery	4	0.1%
No Intervention	5363	96.8%
Species of Concern	151	2.7%
Threatened	10	0.2%

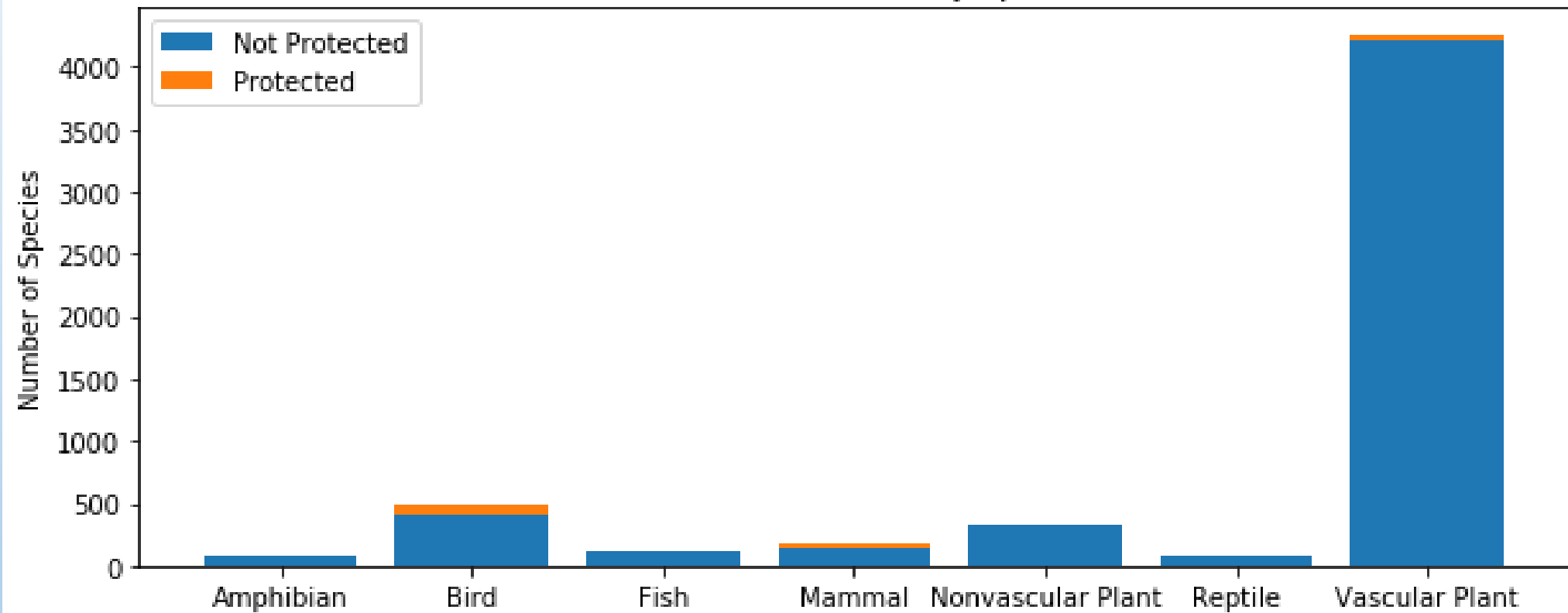
Conservation Status by Species



Protected or not protected, is there is difference?

Category	Not Protected	Protected	Percent Not Protected	Percent Protected
Amphibian	72	7	91.1%	8.9%
Bird	413	75	84.6%	15.4%
Fish	115	11	91.3%	8.7%
Mammal	146	30	83.0%	17.0%
Nonvascular Plant	328	5	98.5%	1.5%
Reptile	73	5	93.6%	6.4%
Vascular Plant	4216	46	98.9%	1.1%

Conservation Status by Species



- Null Hypothesis: Any difference between species was a result of chance.
- Alternative Hypothesis: There is a significance difference between species.

There is a difference between the following sets of animal classes:

	Mammal	Bird	Reptile	Amphibian	Fish	Vascular Plant	Nonvascular Plant
Mammal	N/A	FALSE	TRUE	FALSE	FALSE	TRUE	TRUE
Bird	FALSE	N/A	FALSE	FALSE	FALSE	TRUE	TRUE
Reptile	TRUE	FALSE	N/A	FALSE	FALSE	TRUE	TRUE
Amphibian	FALSE	FALSE	FALSE	N/A	FALSE	TRUE	TRUE
Fish	FALSE	FALSE	FALSE	FALSE	N/A	TRUE	TRUE
Vascular Plant	TRUE	TRUE	TRUE	TRUE	TRUE	N/A	FALSE
Nonvascular Plant	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	N/A

Which category is more likely to be at risk?

And Recommendations

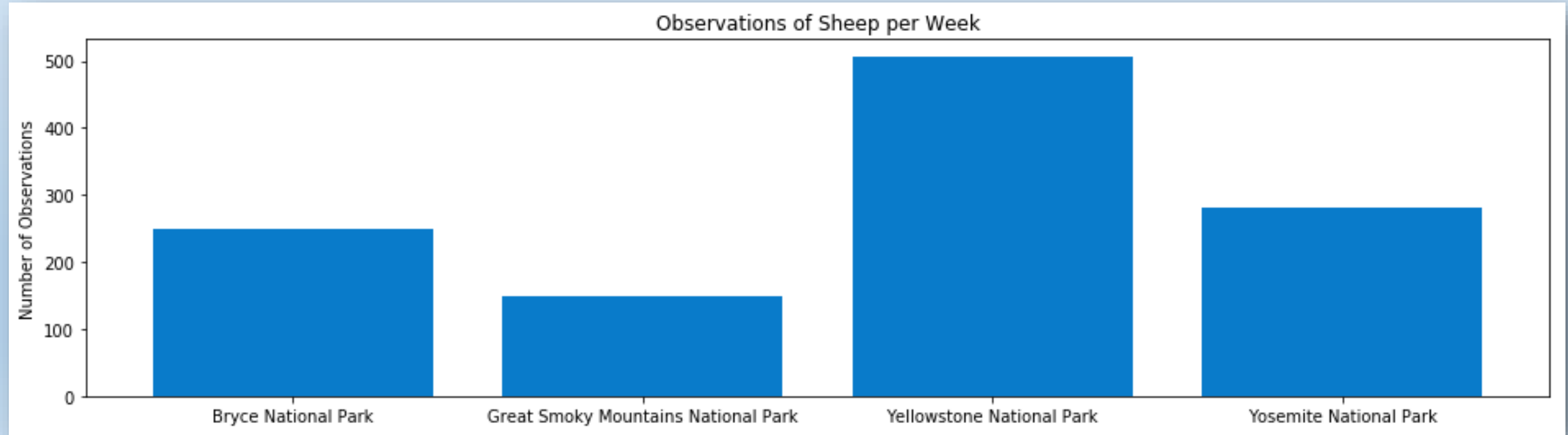
Category	More likely
Mammal, Reptile	Mammal
Mammal, Vascular Plant	Mammal
Mammal, Nonvascular Plant	Mammal
Bird, Vascular Plant	Bird
Bird, Nonvascular Plant	Bird
Reptile, Vascular Plant	Reptile
Reptile, Nonvascular Plant	Reptile
Amphibian, Vascular Plant	Amphibian
Amphibian, Nonvascular Plant	Amphibian
Fish, Vascular Plant	Fish
Fish, Nonvascular Plant	Fish

If funding is not already in place, I suggest the following as a rough approximation:

- 20 % funding to mammal
- 18% into bird amphibian and fish
- 16% into reptile
- 5% into Nonvascular and Vascular Plant.

Sheep Observation

National Park	Percent of Sheep
Bryce	21.0%
Great Smoky Mountains	12.5%
Yellowstone	42.7%
Yosemite	23.7%



Foot and Mouth Reduction Effort

How many sheep need to be observed to be confident of a 5% decrease?

Last year, it was recorded that 15% of sheep at Bryce National Park had foot and mouth disease.

Hence, the values needed to calculate the sample size are:

- Baseline – 15
- Minimum detectable effect – 33
- Statistical Significance – 90%

Using Optimizely - <https://www.optimizely.com/sample-size-calculator/?conversion=15&effect=33&significance=90>

Gives a sample size of 520.

How long will it take to observe enough sheep
at each National Park?

National Park	Number of Weeks
Bryce	2.1
Great Smoky Mountains	3.5
Yellowstone	1.0
Yosemite	1.8

Thank you for your time!