Codecademy: Biodiversity Capstone Project

Seth King March 2018

Photo by Seth King

National Park Service Species Database*

Data we have on species observed at national parks with category, scientific name, common name, and conservation status. Excerpt shown.

	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), Dom...	NaN
3	Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	NaN
4	Mammal	Cervus elaphus	Wapiti Or Elk	NaN
5	Mammal	Odocoileus virginianus	White-Tailed Deer	NaN
6	Mammal	Sus scrofa	Feral Hog, Wild Pig	NaN
7	Mammal	Canis latrans	Coyote	Species of Concern

*Synthetic data supplied by Codecademy for example use only

National Park Service Species Database

Database information

- Database has a total of 5824 entries with 5541 unique scientific names species (283 scientific names duplicated)
- 7 Categories
  - Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant, and Nonvascular Plant
- 5 Conservation Statuses
  - Species of Concern: declining or appear to be in need of conservation
  - Threatened: vulnerable to endangerment in the near future
  - Endangered: seriously at risk of extinction
  - In Recovery: formerly Endangered, but currently neither in danger of extinction throughout all or a significant portion of its range

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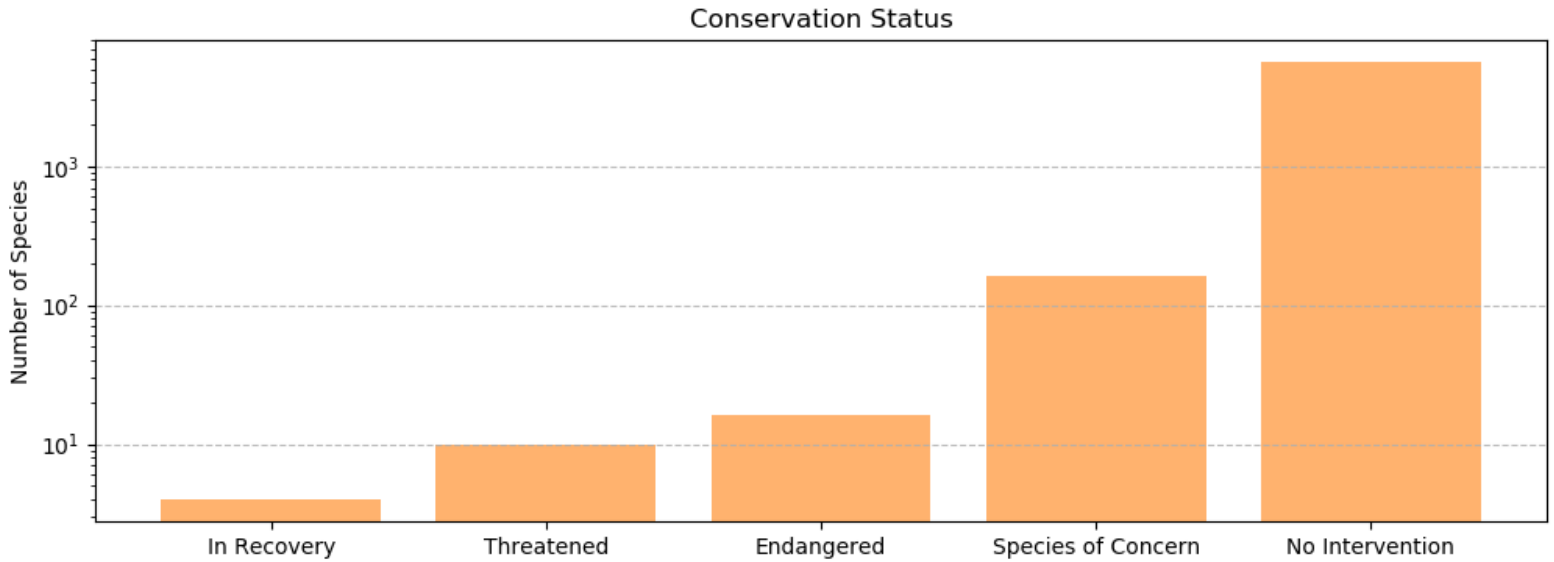
Species Conservation Status

	conservation_status	scientific_name
1	In Recovery	4
4	Threatened	10
0	Endangered	16
3	Species of Concern	161
2	No Intervention	5633



Note the semi-log scale means No Intervention is orders of magnitude larger then the other categories

How many species of each category are protected?

	category	not_protected	protected	percent_protected
0	Amphibian	72	7	8.86%
1	Bird	413	75	15.37%
2	Fish	115	11	8.73%
3	Mammal	146	30	17.05%
4	Nonvascular Plant	328	5	1.50%
5	Reptile	73	5	6.41%
6	Vascular Plant	4216	46	1.08%

We can confirm that there is a statistically significant difference between the amount reptiles needing protection and the amount of mammals needing protection (less than 5% chance that they are the same). However we don't have evidence of any difference between birds and mammals. Birds and mammals should be treated equally in terms of conservation efforts.

Observations Database

Recorded sightings of species over the past 7 days

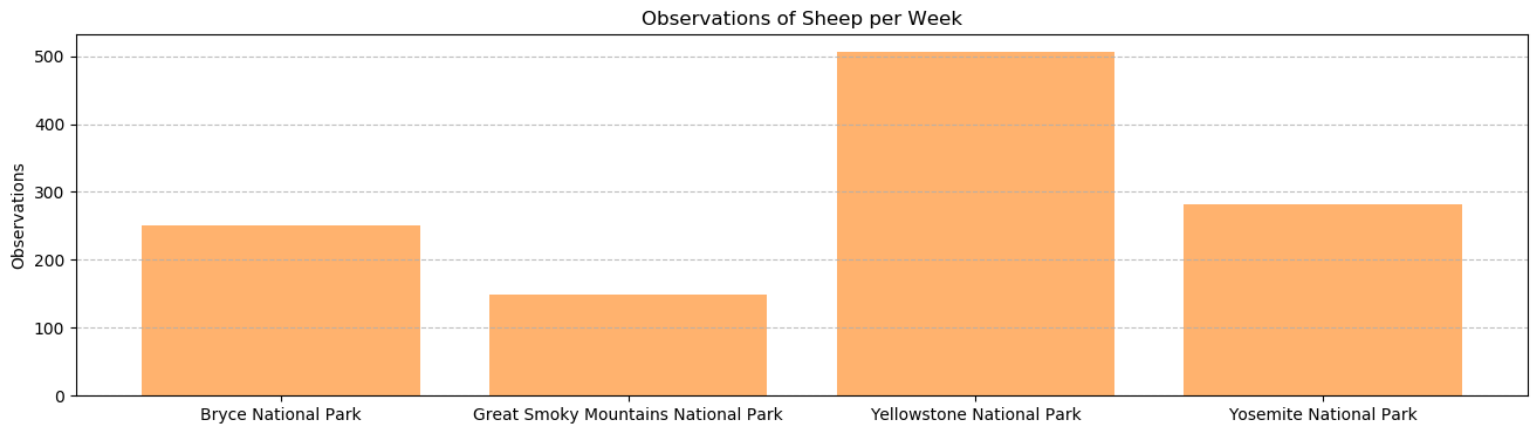
	scientific_name	park_name	observations
0	Vicia benghalensis	Great Smoky Mountains National Park	68
1	Neovison vison	Great Smoky Mountains National Park	77
2	Prunus subcordata	Yosemite National Park	138
3	Abutilon theophrasti	Bryce National Park	84
4	Githopsis specularioides	Great Smoky Mountains National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

Total Observation entries 23,296
Unique species observations 5541
Total observation locations 4

Sheep Observations

Some scientists are studying the number of sheep sightings at different national parks. How many total sheep observations were made at each national park?

	park_name	observations
0	Bryce Canyon National Park	250
1	Great Smoky Mountains National Park	149
2	Yellowstone National Park	507
3	Yosemite National Park	282



Foot and Mouth Disease

Our scientists know that 15% of sheep at Bryce National Park have foot and mouth disease. Park rangers at Yellowstone National Park have been running a program to reduce the rate of foot and mouth disease at that park. The scientists want to test whether or not this program is working. They want to be able to detect reductions of at least 5 percentage point. For instance, if 10% of sheep in Yellowstone have foot and mouth disease, they'd like to be able to know this, with confidence.

- Minimum Detectable Effect 33.3% of baseline
- Sample Size 510 observations
- ~2 weeks to observe enough sheep in Bryce Canyon National Park
- ~1 week to observe enough sheep in Yellowston National Park

Thank you! Codecademy: Biodiversity Capstone Project

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