Biodiversity

Analysis of biodiversity in national parks

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Analyzing Data with Python Capstone Project - Codecademy

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Species description

Species

- 5824 species in total.
- 7 categories of species: Mammal (3.67%), Bird (8.95%), Reptile (1.36%), Amphibian (1.37%), Fish (2.18%), Vascular Plant (5.72%), Nonvascular Plant (76.75%).
- 96.72% of the species don’t require conservation efforts, while 2.76% are species of concern.

Endangerment status analysis

Endangerment status

- 3.28% of species are protected.
- Protected species by category: Mammal (17.05%), Bird (15.37%), Reptile (6.41%), Amphibian (8.86%), Fish (8.73%), Vascular Plant (1.08%), Nonvascular Plant (1.5%).

A significance test for the endangerment status between different categories of species was performed.

- Test method used: Chi Square test*
- Mammals vs birds: The difference in endangerment is not significant**
- Mammals vs reptiles: The difference in endangerment is significant***

* Performed in Python using the chi2_contingency function from scipy.stats

** (0.69 > 0.05) *** (0.04 < 0.05)

Recommendations for conservationists

Recommendations for conservationists

Overall, focus conservation efforts on mammals and birds, which are the species that require the most protection (17.05% and 15.37%, respectively)

Overall, vascular plants, nonvascular plants and reptiles are the species that require the least protection (1.08%, 1.5% and 6.41%, respectively)

- Endangered species: Focus conservation efforts on mammals and fish, which are the categories with the highest % of endangered species (3.41% and 2.38%, respectively)
- Threatened species: Focus conservation efforts on fish and amphibians, which are the categories with the highest % of threatened species (3.17% and 2.53%, respectively)
- Species of concern: Focus conservation efforts on birds, mammals and reptiles, which are the categories with the highest % of species of concern (13.93%, 12.5% and 6.41%, respectively)

Sample size determination for disease study

Foot and mouth disease reduction program study

- 15% of sheep at Bryce National Park have foot and mouth disease
- Detect reductions of at least 5%
- Statistical significance: 90%

Sample size for the study is 39000 sheep *

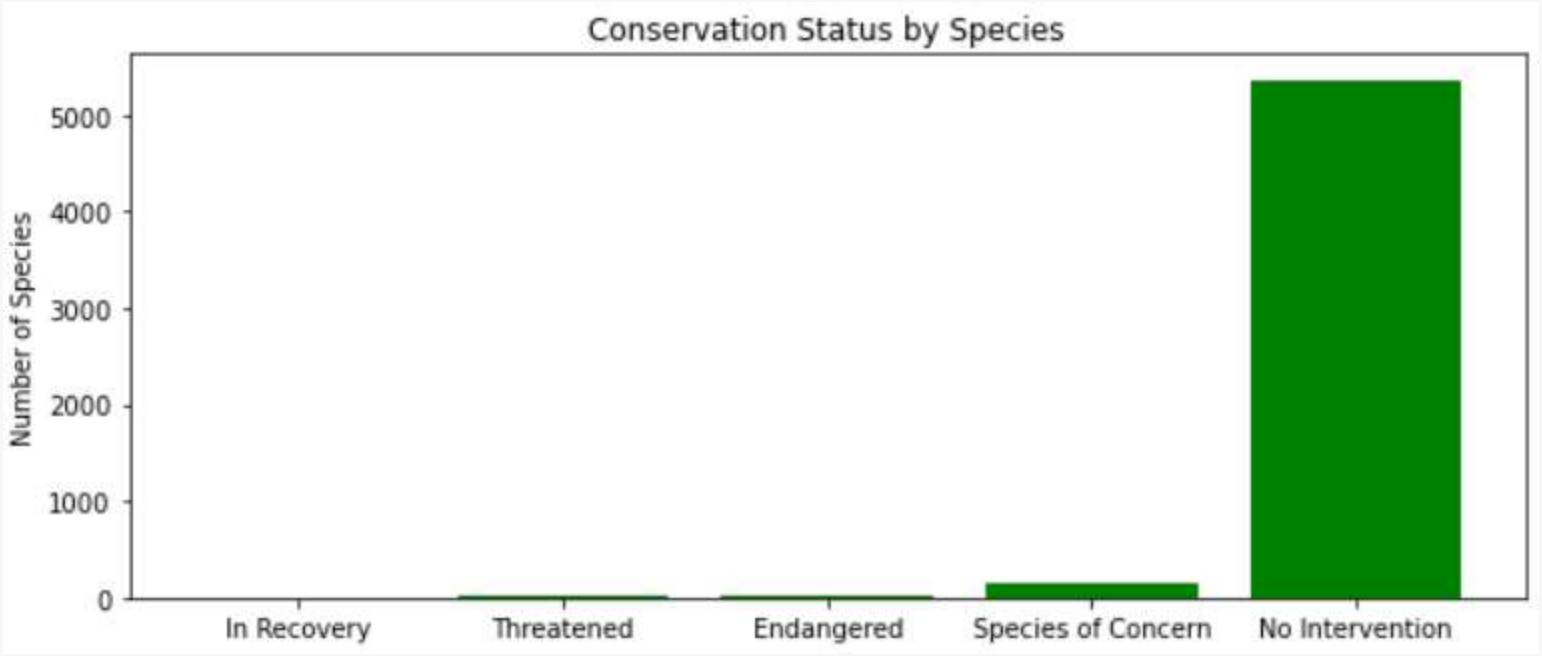
Weeks of observation required by park:

- Bryce National Park: 156 weeks
- Yellowstone National Park: 77 weeks
- Great Smoky Mountains National Park: 262 weeks
- Yosemite National Park: 139 weeks

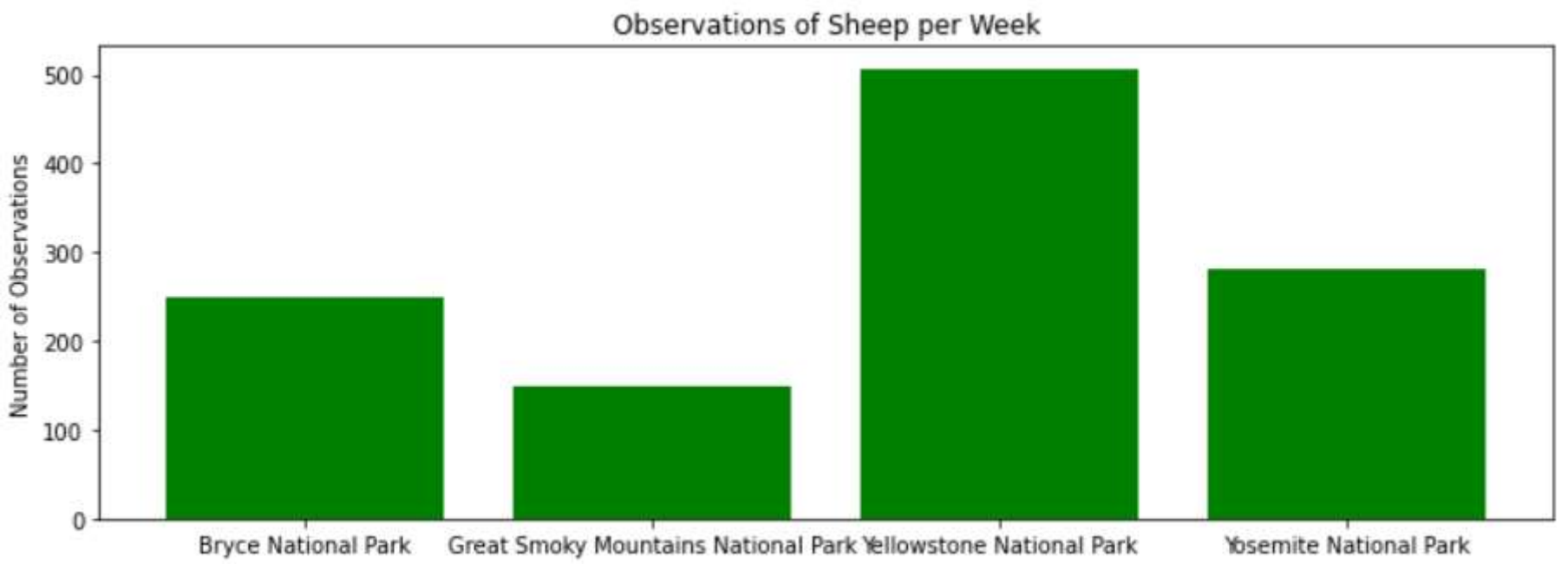
*determined by using Codecademy's sample size calculator

Appendix

Data visualization



Conservation status by number of species. Source: Self-elaboration (Python).



Observations of sheep per week by national park. Source: Self-elaboration (Python).

Thank you.