Conservation of Biodiversity in National Parks

Capstone Project 'B'
Introduction to Data Analysis

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Please see notes section for talking points

Presentation Overview

- Data overview
- Significance calculations
- Foot and Mouth Disease containment
- Recommendations
- Acknowledgements

Data overview (Intro)

- Have access to observed species across four parks
- Observation counts from volunteers and rangers
- Notes on the protection status of the various species

- Asked to analyze data for protection efforts and disease eradication efforts

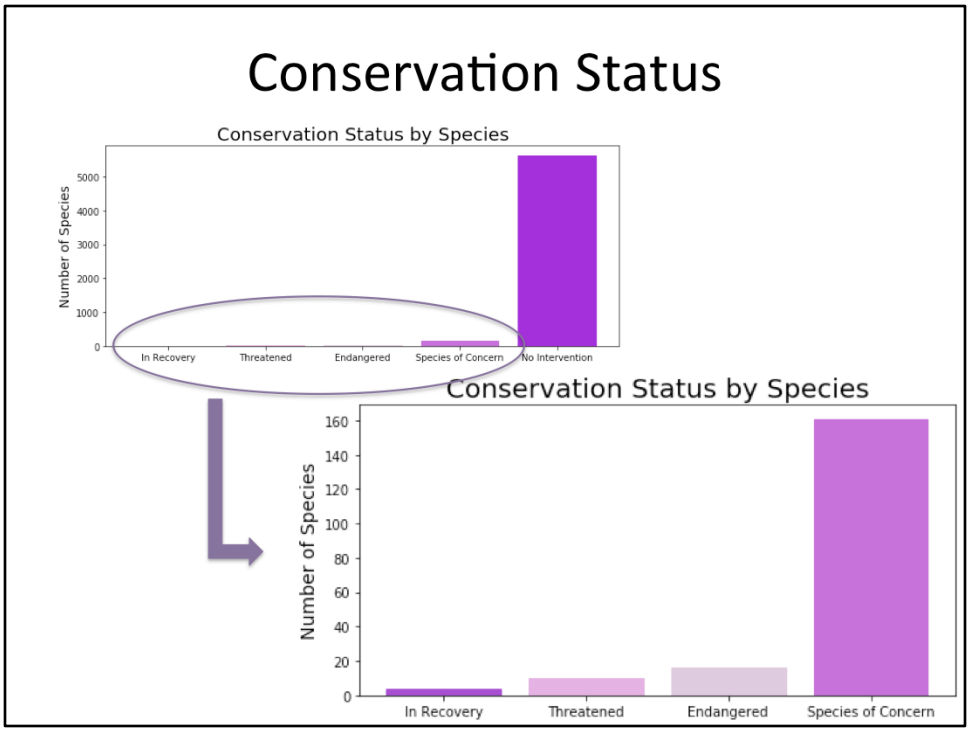
Observation Data excerpt

scientific_name	park_name	observation
Vicia benghalensis	Great Smoky Mountains Natic	68
Neovison vison	Great Smoky Mountains Natic	77
Prunus subcordata	Yosemite National Park	138
Abutilon theophrasti	Bryce National Park	84
Githopsis specularioides	Great Smoky Mountains Natic	85
Elymus virginicus var. virgini	Yosemite National Park	112
Spizella pusilla	Yellowstone National Park	228
Elymus multisetus	Great Smoky Mountains Natic	39
Lysimachia quadrifolia	Yosemite National Park	168

Species Data excerpt

Mammal	Odocoileus virginianus	White-Tailed Deer	
Mammal	Sus scrofa	Feral Hog, Wild Pig	
Mammal	Canis latrans	Coyote	Species of Concern
Mammal	Canis lupus	Gray Wolf	Endangered
Mammal	Canis rufus	Red Wolf	Endangered
Mammal	Urocyon cinereoargent	Common Gray Fox, Gr	
Mammal	Vulpes fulva	Black Fox, Cross Fox,	

Observarion Data gives the scientific name, park and count.
Species Data gives translation to common name, type of species, and protection status.



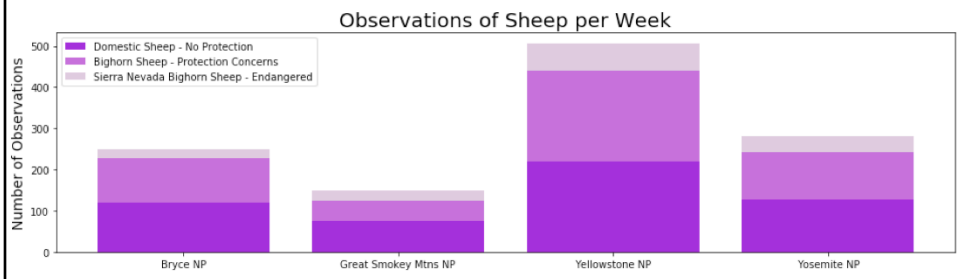
Of the more than 5000 different plant and animal species in the parks surveyed, the vast majority are not under any kind of protection status.
In the second graph, I've enlarged the region showing the counts of species that are identified as being in some danger.

Conservation Status by Type

Type of Species	Not Protected	Protected	Percent Protected
Mammal	176	38	17.8%
Bird	442	79	15.2%
Amphibian	73	7	8.8%
Fish	116	11	8.7%
Reptile	74	5	6.3%
Nonvascular Plant	328	5	1.5%
Vascular Plant	4424	46	1.0%

There is a statistically significant higher risk of having a protection designation if the type of species is Mammal. Reptiles and plants are generally at lower risk.

Sheep and Disease



At this rate of observation, several more weeks of observing need to occur before we can determine with statistical significance if disease eradication efforts are working. 35000 observations will need to be made to achieve significance.

Yellowstone NP will need to run the study for 69 weeks.
Bryce NP will need to run the study for 140 weeks (or nearly three years)

One example of conservation efforts is the attempted reduction of foot and mouth disease in sheep. Currently there is about a 15% infection rate. Treatment efforts are hoping to reduce this to 10%.

Observation studies have been conducted in the parks and I'll show current status. I've broken it down to include the types of sheep and their protection status per park.

Recommendations

- Continue to monitor park species, particularly mammals and birds as they are of greater risk of extinction.
- Continue to develop disease prevention methods, especially for those animals of greatest risk.
- If resources are tight, reducing the efforts in plant conservation and observation could be an option as they are of least risk.

Acknowledgements

- Codecademy for teaching me the skills needed to put this together
- My kids for supporting my study time and choosing the colors for the presentation
- My pet mammals for making me realize daily that the world needs to take care of our species diversity.