Biodiversity for the National Parks

ENDANGERED SPECIES CONSERVATION STATUS REPORT

Raw Data

THE DATA I ANALYZED INCLUDES:

- THE SCIENTIFIC NAME OF EACH SPECIES
- THE COMMON NAMES OF EACH SPECIES
- THE SPECIES CONSERVATION STATUS

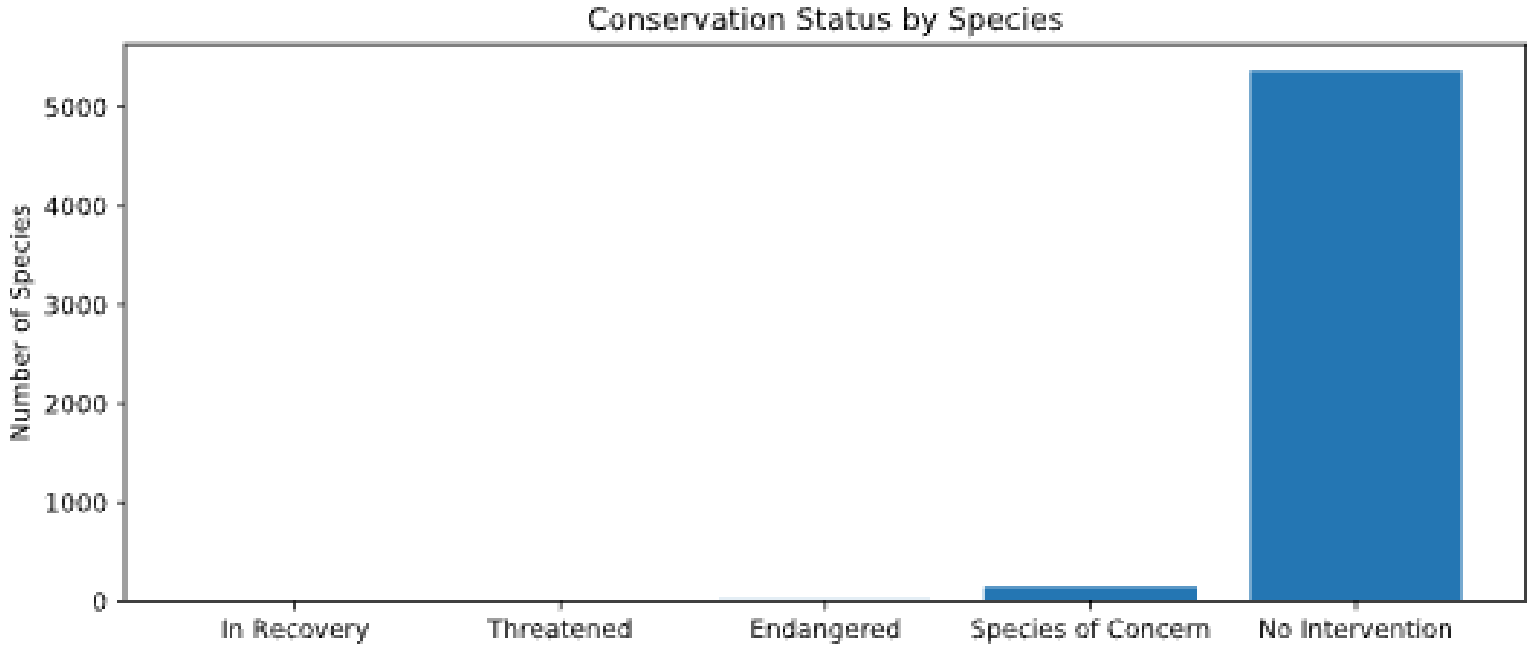
THERE ARE FIVE POSSIBLE CONSERVATION STATUSES:

- **ENDANGERED:** SERIOUSLY AT RISK OF EXTINCTION (15 SPECIES)
- **IN RECOVERY:** FORMERLY ENDANGERED, BUT CURRENTLY NOT IN DANGER OF EXTINCTION THROUGHOUT ALL OR A SIGNIFICANT PORTION OF ITS INHABITABLE RANGE. (4 SPECIES)
- **SPECIES OF CONCERN:** DECLINING POPULATION OR APPEARS TO BE IN NEED OF CONSERVATION. (151 SPECIES)
- **THREATENED:** VULNERABLE TO ENDANGERMENT IN THE NEAR FUTURE (10 SPECIES)
- **NO INTERVENTION:** SPECIES THAT HAVE A HEALTHY, STABLE POPULATION AND ARE NOT CURRENTLY CONSIDERED IN NEED OF INTERVENTION (5363 SPECIES)

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

Raw Data

THIS TABLE SHOWS THE TOTAL NUMBERS OF SPECIES IN EACH CONSERVATION STATUS



Distribution Across Conservation Status

THIS GRAPH DEMONSTRATES THE DISTRIBUTION OF CONSERVATION STATUS ACROSS SPECIES BASED ON OUR SAMPLE SIZE

Significance Calculations

	category	not_protected	protected	percent_protected
0	Amphibian	72	7	0.088608
1	Bird	413	75	0.153689
2	Fish	115	11	0.087302
3	Mammal	146	30	0.170455
4	Nonvascular Plant	328	5	0.015015
5	Reptile	73	5	0.064103
6	Vascular Plant	4216	46	0.010793

FIRST, SOME BASIC DATA MANIPULATION WAS USED TO GET AN IDEA OF WHETHER CERTAIN TYPES OF SPECIES WERE MORE LIKELY TO BE ENDANGERED THAN OTHERS.

I ARRANGED THE RAW DATA INTO A TABLE AND RAN A CALCULATION TO PROVIDE THE PERCENTAGE OF EACH SPECIES CURRENTLY UNDER PROTECTION.

THE RESULTING TABLE INDICATES THAT BIRDS AND MAMMALS WERE MORE LIKELY TO REQUIRE INTERVENTION THAN FISH AND PLANTS.

APPROXIMATELY 15% OF BIRDS AND 17% OF MAMMALS CURRENTLY REQUIRE PROTECTION.

Significance Calculations

NEXT, I WANTED TO KNOW WHETHER THE DIFFERENCE BETWEEN THE PERCENTAGES OF BIRDS AND MAMMALS WAS STATISTICALLY SIGNIFICANT.

TO INVESTIGATE THIS, I RAN A CHI-SQUARED TEST BETWEEN THE TWO SPECIES. THE TEST REVEALED THAT, WHILE MAMMALS APPEAR TO BE MORE LIKELY TO BE ENDANGERED THAN BIRDS, THE DIFFERENCE IS NOT STATISTICALLY SIGNIFICANT.

I RAN THE TEST AGAIN TO COMPARE MAMMALS AND REPTILES.

IN THIS INSTANCE, WE DID FIND A STATISTICAL SIGNIFICANCE. I.E. MAMMALS ARE SIGNIFICANTLY MORE LIKELY TO BE ENDANGERED THAN REPTILES.

RUNNING THE TEST FOR ADDITIONAL COMPARISONS PROVIDED NO FURTHER STATISTICAL SIGNIFICANCES.

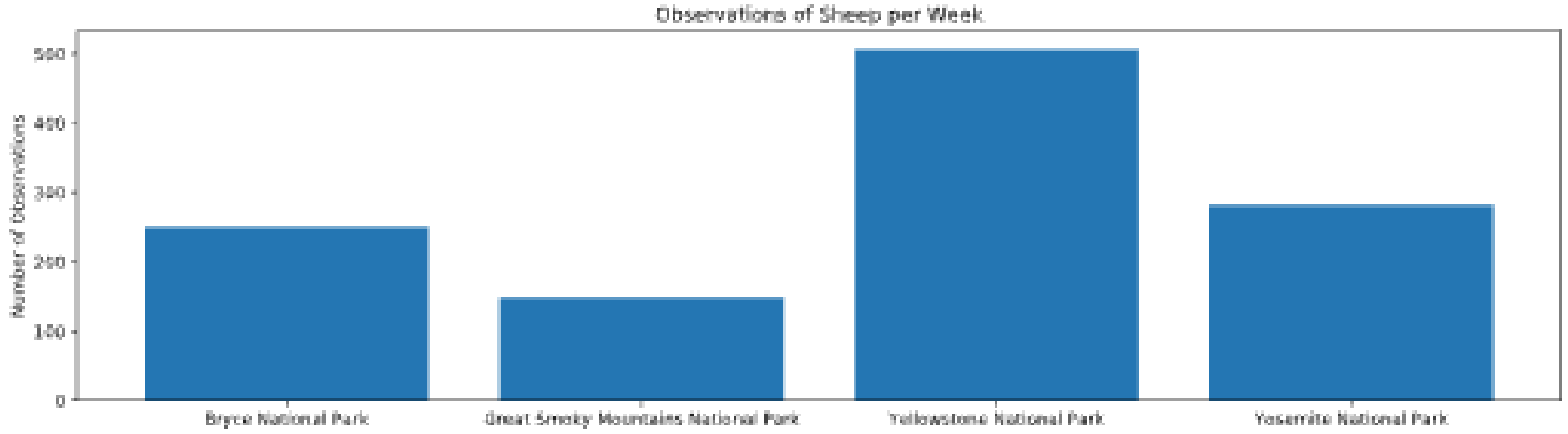
Endangered Species Recommendations

BASED ON THE DATA AVAILABLE AND THE CALCULATIONS OF SCIENTIFIC SIGNIFICANCE, I RECOMMEND THAT MAMMALS BE THE PRIMARY FOCUS OF ENDANGERED SPECIES INTERVENTION PRACTICES AND POLICIES.

BIRDS SHOULD BE THE SECONDARY FOCUS OF SUCH PRACTICES AND POLICIES. PLANTS, FISH, AND REPTILES ARE OF LESS IMMEDIATE CONCERN.

Foot and Mouth Disease Study – Sample Size Determination

- WE KNEW FROM LAST YEAR THAT 15% OF SHEEP WERE RECORDED TO HAVE FOOT AND MOUTH DISEASE. THEREFORE OUR BASELINE CONVERSION RATE WAS 15.
- WE WANTED TO BE ABLE TO DETECT A REDUCTION RATE OF AT LEAST 5%. THE CALCULATION TO DETERMINE THIS WAS 100*5./15, RESULTING IN A 33.33% MINIMUM DETECTABLE EFFECT
- PLUGGING THIS DATA INTO THE SAMPLE SIZE CALCULATOR WITH A 90% STATISTICAL SIGNIFICANCE GAVE US A SAMPLE SIZE OF 870.
- USING THIS NUMBER WITH THE DATA FROM THE NUMBERS OF SHEEP OBSERVED PER WEEK, WE DETERMINED THAT IT WOULD TAKE OUR SCIENTISTS APPROXIMATELY 1.72 WEEKS TO OBSERVE ENOUGH SHEEP TO FILL OUR SAMPLE SET FROM YELLOWSTONE NATIONAL PARK AND 3.48 WEEKS AT BRYCE NATIONAL PARK.



Numbers of Sheep Observed by Park

THIS GRAPH DEMONSTRATES THE NUMBER OF SIGHTINGS OF EACH DIFFERENT SPECIES OF SHEEP PER WEEK, INDICATING THE DISTRIBUTION OF SHEEP SPECIES ACROSS PARKS