Biodiversity across our National Parks

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Photo credit: MVMoya

Part I:

Conservation statuses of different species types across the parks

Part II:

Curbing foot and mouth disease in sheep populations across the parks

Part I:

Conservation statuses of different species types across the parks

Conservation statuses of different species types across the parks

We have data on 5541 unique species:

* **Category** — Mammal, Bird, Reptile, Amphibian, Fish, Vascular/Nonvascular Plant

* **Scientific Name** — Example: *Cervus elaphus*

* **Common Name** — Example: Wapiti Elk

* **Conservation Status** — No Intervention, In Recovery, Species of Concern, Threatened, Endangered

Summary of conservation status across all species

Status	# of species
✳ No Intervention	5363
✳ In Recovery	4
✳ Species of Concern	151
✳ Threatened	10
✳ Endangered	15

Conservation Status of Species

~3% of total
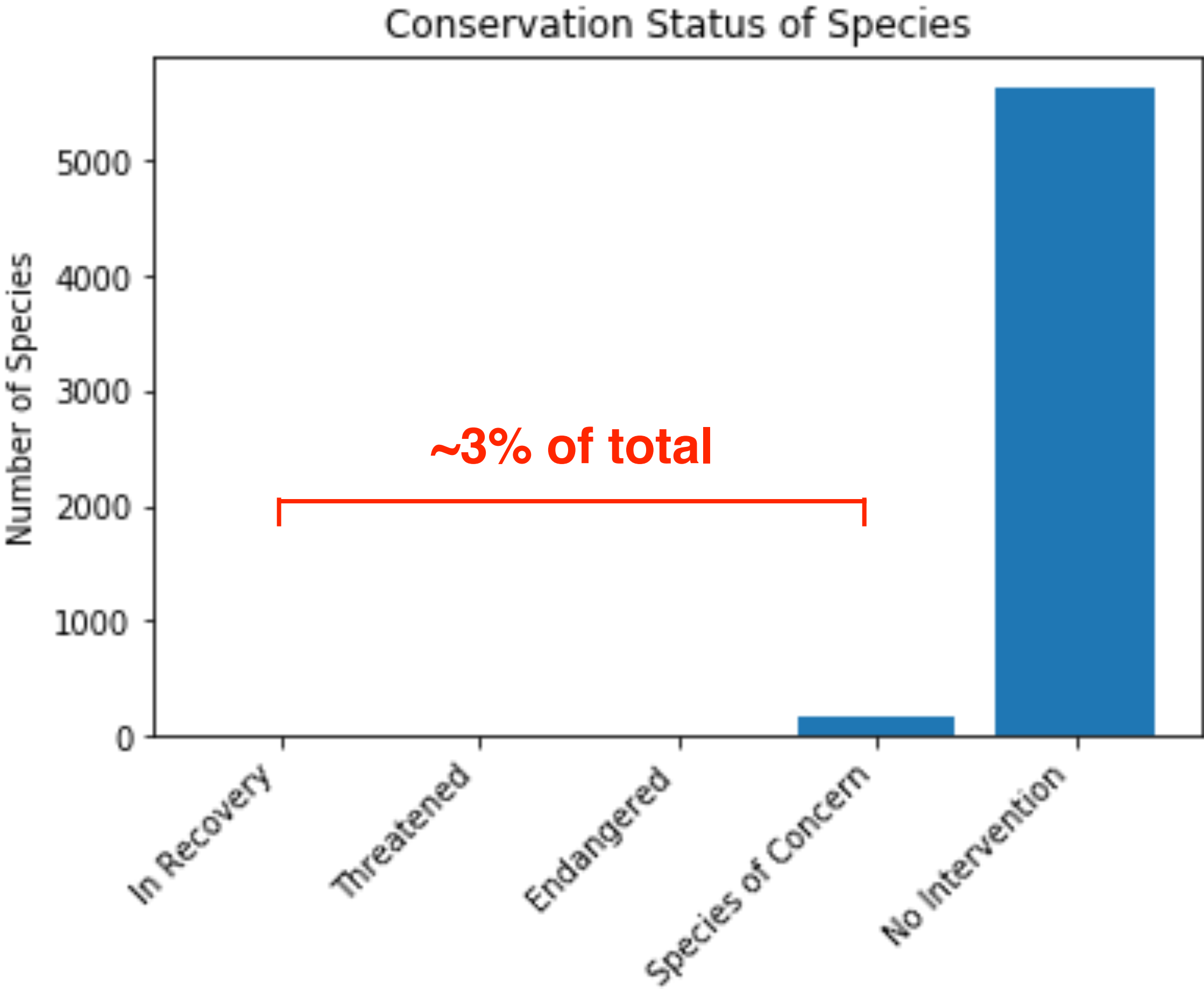
Mammals are more likely to be endangered than most other species types

Category	Percent protected	P-value (Mammal vs. Species)
✳ Amphibian	91.3%	0.08
✳ Bird	84.8%	0.45
✳ Fish	91.3%	0.03 *
✳ Mammal	82.2%	
✳ Reptile	93.7%	0.02 *
✳ Nonvascular Plant	98.5%	1.68e-11 *
✳ Vascular Plant	99.0%	1.73e-10 *

(* = significant)

Mammals are more likely to be endangered than most other species types

Recommendation:

It is important to understand what specific mammalian species are currently of concern. This will allow us to determine if there are specific groups, areas, or parks that are being affected, and from there potentially uncover underlying causes of population decline.

In the meantime, visitors to the parks should be more carefully informed about safe and sustainable ways to interact with the wildlife in the park. This may help to strengthen, or at least maintain, conservation of species across the parks.

Part II:

Curbing foot and mouth disease in sheep populations across the parks

Curbing foot and mouth disease in sheep populations across the parks

It is suspected that 15% of sheep in Bryce National Park have the disease

Rangers in Yellowstone are testing a new strategy to reduce the incidence of the disease
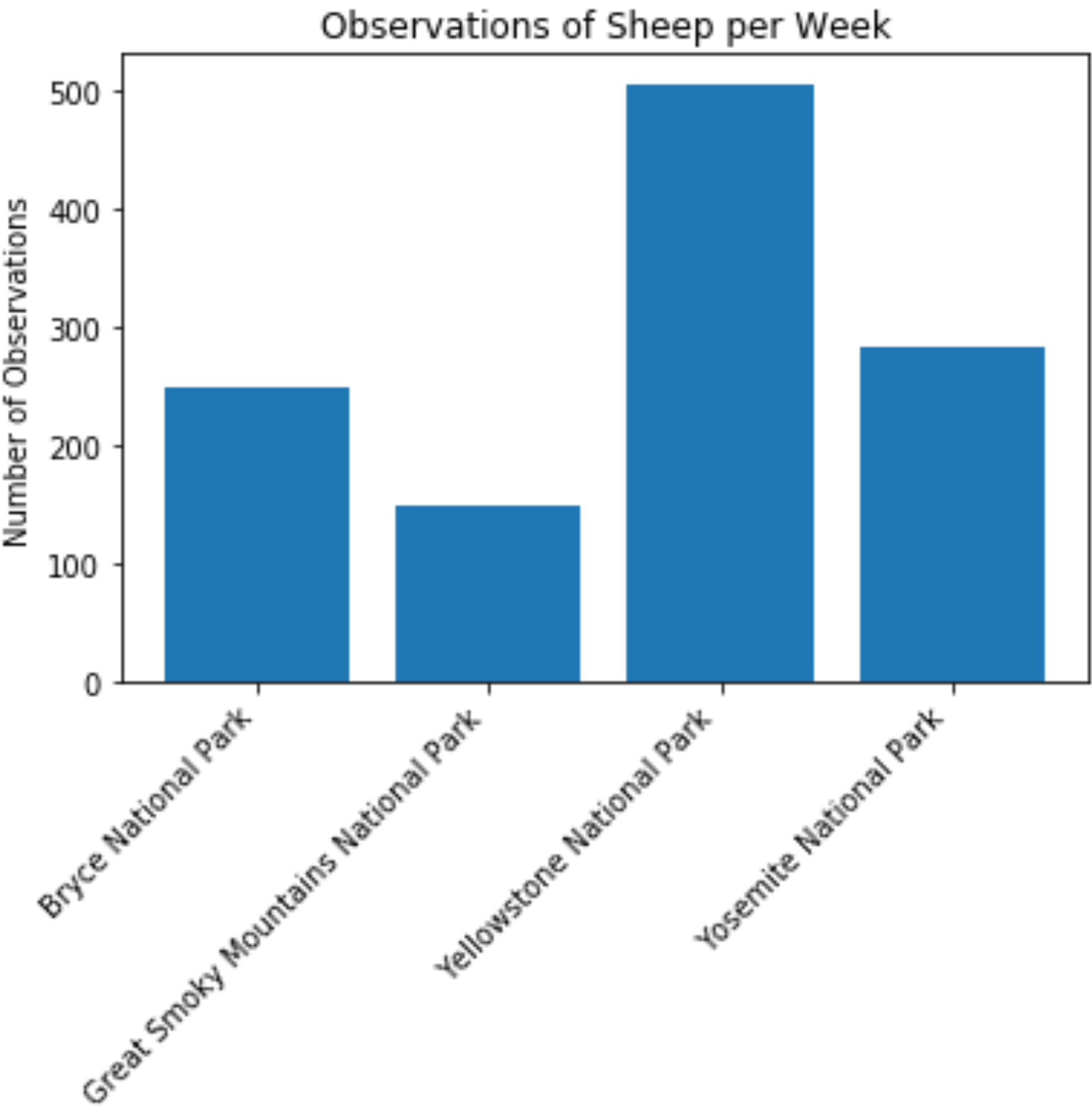
In order to determine its effectiveness, we need to monitor sheep populations across the parks

Monitoring sheep populations by using observation data

We have data on the number of sheep species observed across all parks in the past week

Park name	# of observations
* Bryce	250
* Great Smoky Mountains	149
* Yellowstone	507
* Yosemite	282

Observations of Sheep per Week

Monitoring sheep populations by using observation data

Using these data and a sample size calculator, we determined:

In order to detect a 5 percentage point change with 90% confidence in foot and mouth incidence following implementation of the abatement strategy, 520 sheep would need to be sampled at each park.

In Bryce National Park, this would take approximately 2 weeks

In Yellowstone National Park, this would take approximately 1 week

In summary

These data sets can be used to closely monitor wildlife across National Parks and changes in species populations over time.

Actionable conservation strategies can potentially be developed from patterns and trends observed in the data. These strategies will be important for maintaining a richly diverse wildlife population that can be enjoyed by millions of park visitors.

Thank you!