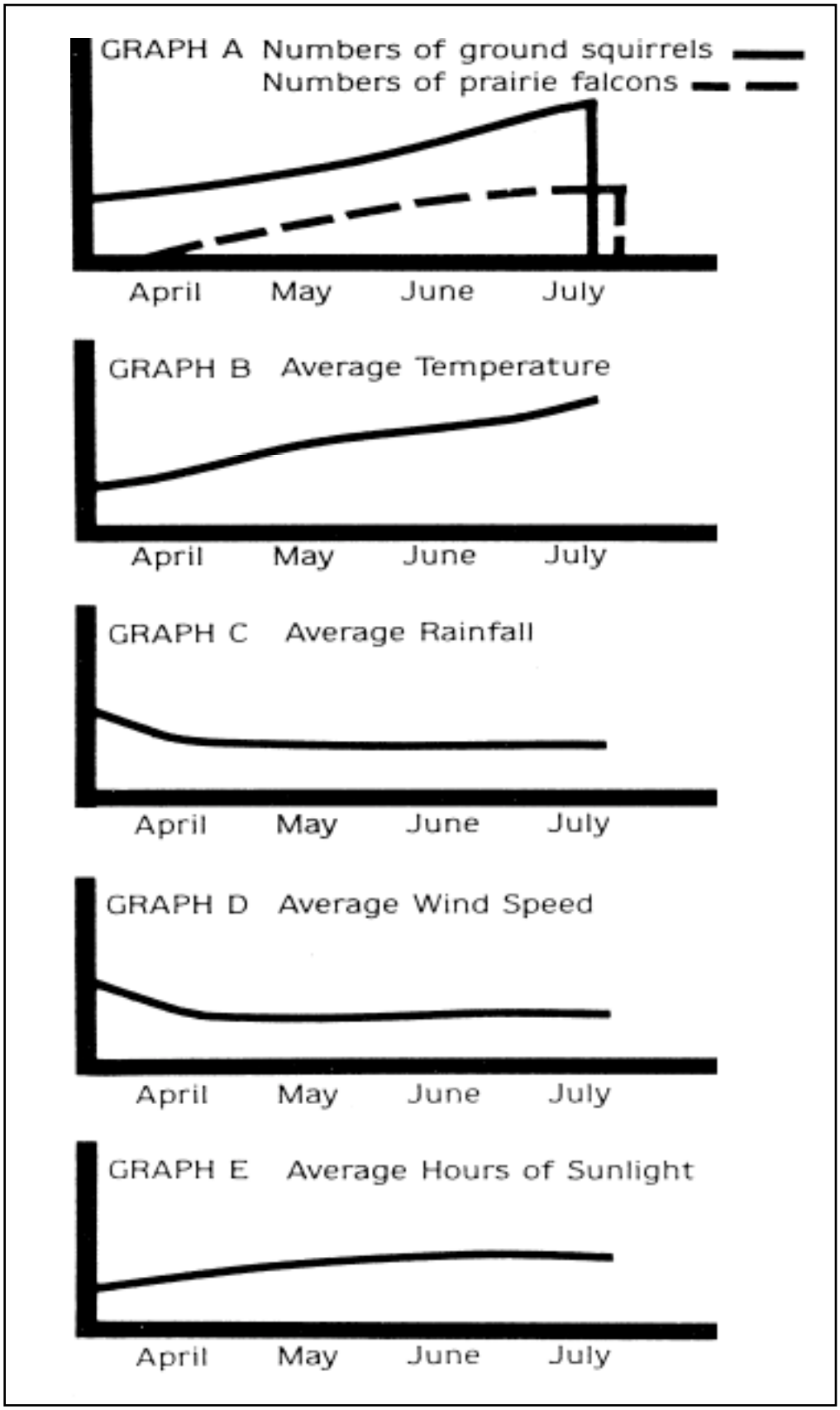
Student Page

Graphs relating to the prairie falcons and the squirrels



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Endangered Species – A native species or subspecies that is in serious danger of becoming extinct throughout all or a significant portion, of its range as a result of one or more causes, including loss of habitat, over-exploitation, competition, or disease.

Threatened Species – A native species that, while not presently threatened with extinction, is likely to become endangered in the foreseeable future if not given special protection and management efforts.

Rare Species – A native species that although not presently threatened with extinction, exists in such small numbers throughout is range that it may become threatened if its present environmental conditions worsen.

Species Name:

1. What is its status? (see above)

2. Where does it live?

3. What does it look like?

4. What is its habitat?

5. What is the current range of its population? Has its range changed over the course of history?

6. Why is it endangered, threatened, or rare?

7. Are any current actions being taken to improve its chances of survival? If not, or if you do not know of any, what can you suggest?

8. What are some ways in which people can reduce or eliminate the threats to the survival of this species?

9. What other species depend on it?

Give some reasons why it is important that this species survives.

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National Parks are areas of such national significance as to justify special recognition and protection in accordance with various acts of Congress. The act of Congress that established the National Park Service was signed August 25, 1916. The act was called the "Organic Act". The Act states that the Park Service's mission is: " ... to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

Areas are added to the National Park System for their natural, cultural and scientific values. These include expanses or features of land or water of great scenic and scientific quality. Such areas contain one or more distinctive attributes such as forest, grassland, tundra, desert, cave, estuary, or river systems. They may contain "windows" to the past for a view of geological history, imposing landforms such as mountains, mesas, thermal areas, and caverns. And they may be habitats of abundant or rare wildlife and plant life. Generally, a national park contains a variety of resources, encompasses large land or water areas, or helps provide adequate protection of the resources.

In the years between 1900 and 1999, the National Park system has grown from 3,300,000 acres to 83,300,000 acres, with about two thirds of the acres being protected as naturally operating ecosystems. The public use of these areas has increased over the past fifteen years (see Table). Use is increasing at a more rapid rate than population growth, creating problems related to the management and protection of these areas.

TABLE

	1975	1983	1990	1999
Visits to the National Park Systems (all areas)	238,800,000	334,500,000	258,682,828	287,130,879
Population of the United States	212,796,000	234,284,000	248,709,873	276,294,071

More people are seeking to spend time in natural areas and to enjoy nature. They are finding environmental problems like polluted lakes, litter, garbage, and overcrowding of these natural areas. These affect not only our enjoyment of an area, but also the wildlife, vegetation, and watersheds too.

Student Sheet

MYSTERY STORY

Black Hills bighorn sheep herd live in an ecosystem characterized by rugged mountains, canyons, and small grassy valleys. In the summers, they inhabit the mountainous terrain and in the winter, they move to the valleys where food is more available. When the bighorn move to the valley bottoms they move onto privately owned land while most of the higher terrain is public land.

During the summer months, wildlife biologists estimated the bighorn sheep herd being studied to number 250. This was the largest herd size in many years. Numerous ewes with lambs were sighted in alpine meadows and scattered bands of rams were noted at higher elevations.

In December, late-season elk hunters in the area reported a lot of bighorn. All appeared healthy, although there seemed to be very few lambs. Many rams were observed fighting other males for females with whom to mate.

January brought unusually heavy snows and cold weather. Snow depths were up to five feet and mid-day temperatures were as low as –20 degrees (F). On January 18th, wildlife biologists noted ski tourists pulling off the highway taking pictures of the sheep. One tourist came within ten feet of a ram. Bitter cold and deep snows persisted.

Ranchers were noticing that many of the bighorn appeared to be tired, ragged, and weak. The bighorn staggered and mucous discharge was observed coming from their mouths and from sores. Many bighorn were coughing. On January 21st, one rancher notified wildlife officials.

Two days later, wildlife officers found eight dead rams and two extremely sick ewes. Two dead bighorn were set to a university lab where necropsies were performed to determine the cause of death.

On February 5th, ground surveys and aerial flyovers found only 48 bighorn alive. Some of the remaining bighorn sheep were netted and medically treated. Food was brought in. No more deaths occurred.

MYSTERY QUESTIONS

1. How many bighorn sheep died between the summer and February 5th?
2. What unusual wildlife behavior could have been an early clue that something was wrong with the herd?
3. Why did so many of the herd die in such a short period of time?
4. Why did the rams die earlier than the ewes?
5. Why were there only a few lambs in December, though there were many in the summer?
6. How do Bighorn sheep get lungworm?
7. Why don't all bighorn sheep die of pneumonia/lungworm?
8. What is the relationship between the pneumonia and the lungworm?
9. Who or what caused the die-off of the bighorn sheep?

Mystery Fact Cards

Fact #1
The necropsies revealed that the dead bighorns had pneumonia-causing bacteria.

Fact #2
Necropsies revealed dead bighorn were found to have parasites called lungworms.

Fact #3
The elk hunters were riding snow-mobiles. Bighorn are easily spooked by the presence of these noisy machines. They get nervous.

Fact #4
Heavy snows make travel difficult for bighorn. Herds begin to congregate on the few pieces of bare ground available.

Fact #5
When grazing, bighorn sometimes eat small land snails by accident.

Fact #6
The lungworm larvae can move across the placenta from the pregnant ewe into its fetus.

Fact #7
Lungworms form open sores in the lungs.

Fact #8
During cold weather, bighorn sheep spend lots of energy trying to stay warm. Their caloric needs increase.

Fact #9
Young lungworm larvae are excreted in bighorn sheep fecal pellets.

Fact #10
High activity levels tire and stress bighorns.

Fact #11
Pneumonia causes bighorn sheeps' lungs to fill up with mucous. They try to cough it up.

Fact #12
During winter bighorn paw through the snow to eat grass. This is tiring.

Fact #13
Even healthy bighorn sheep have the bacteria that causes pneumonia.

Fact #14
The larval stage of the lungworm is found in small land snails.

Fact #15
The breeding season for bighorn sheep is November and December. Rams actively fight for the right to breed ewes.

Fact #16
The larval stage of the lungworm travels from the bighorns' stomach to its lungs.

Fact #17
Diseases spread easily among herds in crowded conditions.

Fact #18
Generally speaking, only unhealthy wild animals allow humans to get close.

Fact #19

During the summer, bighorn stay at high elevations (public lands) eating nutritious alpine plants. When winter snows arrive, they typically move down onto lower privately owned land.

Fact #20

Healthy bighorn sheep rarely get diseases. Young or physically stressed animals are more likely to succumb to disease.

Fact # 21

Ranchers grazed large numbers of cattle on their private lands in the canyon/valley bottoms during the summer.

Fact #22

Once in the lungs the lungworms mate and lay eggs. When the eggs hatch, the young larvae are coughed up and swallowed.

Fact # 23

Bacteria that cause pneumonia can only cause this disease if it finds open sores in the lungs.

Fact # 24

During the summer, one rancher sold some of her valley land to a real estate developer. A few homes were built that summer. A few more are being planned.