Background on Conserving Our Natural Resources

Because of the role they play in conserving lands under their jurisdiction, national parks are often the last sanctuaries for many plants and animals. The role of the National Park Service as a protector of biological diversity is emphasized in the 1987 report of the Director's Task Force on Biological Diversity, which says, "National Parks within or containing natural areas should, first, protect biological diversity and underlying processes that maintain and generate natural biological diversity. Just about any park can be made adequate for preserving tourism, but no national park can be made adequate for preserving biological diversity without a superior investment in protection."

Many potentially important plants and animals exist within habitats protected by national parks. They are important for their economic as well as esthetic value. Their contribution to our daily welfare is tremendous: food and drink, medicines and pharmaceuticals, industrial products, transportation, energy, research, construction. We know surprisingly little about most of the earth's plants and the direct economic benefits we might enjoy from them, yet we are rapidly eliminating them. Presently, one species each day is being eliminated from the face of the earth, and that number is only expected to increase. Through the establishment of national parks, it is possible to assist in maintaining biological diversity in the natural world and slow down that elimination.

Yet scientists and park professionals realize that all of their efforts to preserve habitats and protect diversity within park boundaries will not be enough. External forces from around the world have a tremendous impact on what happens within national parks.

It is for this reason that this unit will examine the role that national parks play in maintaining and preserving biological diversity. More significantly, it will show your students why that role is an important one.

OBJECTIVES

After completing this exercise the student will be able to

1. introduced to the ideas of conservation, preservation, and protection
2. be able to determine what resources should be protected, and why

GRADES: 6 TO 8

AZ CURRICULUM STANDARDS:
Language Arts Standard 2 – Writing
Language Arts Standard 3 – Listening and Speaking

GROUP SIZE: 25

DURATION: 1 hour

SETTING:Classroom

MATERIALS: Paper, pens, pencils, various art supplies.

Educator's Outline for

DESIGN YOUR OWN NATIONAL PARK

BACKGROUND: The national park areas protect both natural and cultural resources. Parks that exhibit historic houses, grand canyons, waterfalls, battlefields, lakes, endangered species, lighthouses, marshes, and badlands can all be found within the protection of the National Park Service.

PROCEDURE:

1. On a sheet of paper, have the students design their own park. Have them represent park boundaries, and within those boundaries whatever special natural and cultural features that will be protected. These might include mountains, rivers, wetlands, canyons, springs, beaches, ancient ruins, or historic houses.

2.After the initial resource is represented, have the students include any visitor services that will be included in their park. Does the park have roads or trails? Are there campgrounds, visitor centers, gift shops, and restaurants? Remember, not all parks have visitor services. Some parks are purely wilderness areas, such as the National Park of American Samoa.

3. If time permits, have your students design a brochure that includes a park map, hours, etc

4. All parks have their own mission statement. Have the student write a mission statement for their park, including goals for preservation and visitor enjoyment.

5. Have the students introduce their park and explain why they chose to preserve the resources they did.

Educator's Outline for

CONSERVING THE PARKS

OBJECTIVES

After completing this exercise the student will be able to

1. list three ways biodiversity is preserved in national parks
2. list three threats to biological diversity in national parks.

GRADES: 6 TO 8

AZ CURRICULUM STANDARDS:
Language Arts Standard 1 – Reading
Science Standard 4 – Life Science

GROUP SIZE: 25

DURATION: 2 hours

SETTING: Classroom

MATERIALS: 1 manila folder, dice, 20 - 3x5 index cards, map of a national park (available at the park visitor center), student activity sheets GAME CARDS 1–3

PROCEDURE:

1. On an open manila folder have each group of two to four students draw the outline of the national park you will visit. Use the map you got from the park visitor center. Leave enough space so that another parallel outline about 2 inches outside the original one can be drawn. Include natural features found on the park map. Divide the space between the two outlines into 60 to 80 spaces. Designate a beginning and end point. Most game boards use a clockwise movement. It will help if the start square has a large arrow to indicate the direction of movement around the board.

2. Use about 20 cards from those provided on the Activity Sheet, GAME CARDS. As a result of reading, research, and a visit to a national park, encourage students to create their own biodiversity statements and add them to the suggestions listed.

3. To play the game, shuffle the cards and place them face down on the game board. Each player rolls a die, the player rolling the highest number starting the game. If an even number is rolled, the player moves forward that many spaces. If an odd number is rolled, the player selects a statement and moves either forward or backward, depending on the nature of the situation. The first player to reach the goal of biological diversity wins the game. The player has to roll the exact number to land on the winning space.

4. Discuss the game with the class and ask students to comment on these questions:

   - Why are national parks so important in preserving biological diversity?
   - In 1854, Chief Seattle of the Suquamish said, "If all the beasts were gone, we would die from a great loneliness of spirit ... All things are connected. Whatever befalls the earth befalls the children of the earth." What does the word "connected" refer to? What arguments can you offer to show that we are connected to plants and animals? What did Chief Seattle

mean by: "Whatever befalls the earth befalls the children of the earth?" How would Chief Seattle say the natural environment is to be treated?

- What are some things that happen to biodiversity as a result of people? If students list all bad things, ask whether there are any good things.

- Are most of the factors affecting biodiversity biotic or abiotic? (Examples of biotic factors are: presence of other living organisms, odors, sounds made by other organisms, and removal of something by another organism, e.g., leaves and twigs eaten by deer. Examples of abiotic factors are: rain, temperature, clouds, and weather elements.)

GAME CARDS 1

Scientists have money to do research on endangered organisms. Go ahead 3 spaces.	Cooperate with state, federal, and international organizations to preserve park biodiversity. Go ahead 3 spaces.
Maps of all features of the park — water, soil, land use — are completed. Go ahead 2 spaces.	A survey to learn all the plants and animals living in the park is completed. Go ahead 4 spaces.
There is not enough money to fund a plant and animal survey in the park. Go back 4 spaces.	Poaching in park. Go back 2 spaces.
Air pollution is a constant problem in the park. Go back 4 spaces.	Natural resources come first. Visitors are restricted to certain areas of the park. Go ahead 3 spaces.
Use of pesticides held to a minimum. Go ahead 3 spaces	Volunteers assist in restoration of critical habitat. Go ahead 3 spaces.
Management for endangered species is explained to visitors. Go ahead 3 spaces.	Non-native plants are removed. Go ahead 3 spaces.
Adjacent land owners protect non-park habitat important to endangered species. Go ahead 3 spaces.	Land development along park boundaries in such a way as to destroy critical habitat. Go back 3 spaces.
There are not enough park personnel to protect biological diversity. Lose your turn.	As much as possible, nature is relied upon to maintain park biological diversity. Go ahead 3 spaces.
Not enough is known about the natural history of an endangered species. Go back 4 spaces.	A migratory bird winters in an area where its habitat is being destroyed. Move back 4 spaces.
Curious visitors disturb an endangered organism. Lose your turn.	Visitors trample vegetation, cause soil erosion and water pollution. Go back 3 spaces.

STUDENT WORKSHEET

GAME CARDS 2

Mining and oil/gas exploration affect air quality and plant and wildlife habitat. Go back 2 spaces.	Not enough understanding of park habitats to make decisions about managing them. Go back 3 spaces.
Cooperate with a zoo or plant garden to return organisms to their natural habitat. Go ahead 3 spaces.	A native organism absent from the park is scientifically reintroduced. Go ahead 3 spaces.
Park needs additional staff to manage and protect endangered habitats. Go back 3 spaces.	Non-native animals destroy native plants and wildlife. Go back 3 spaces.
Rare endangered plants removed from park. Go back 3 spaces.	Returning habitat to its former condition saves an endangered organism. Go ahead 3 spaces.
Park has user fee, money to be used to expand their work on endangered species. Go ahead 2 spaces.	Lands added to National Park System that include new kinds of habitats. Go ahead 3 spaces.
Computerized data bases on endangered plants and animals are improved. Go ahead 2 spaces.	Conduct yearly surveys to determine numbers of rare plants. Go ahead 3 spaces.
Native predator reintroduced. Go ahead 3 spaces.	Conduct yearly surveys to determine numbers of rare plants. Go ahead 3 spaces.
Unnatural regulation of water level outside park destroys fish, water birds, and aquatic plants. Go back 3 spaces.	Citizens take pride in the land and its organisms everywhere. Go ahead 3 spaces.
Project to develop and maintain a native plant nursery is funded. Go ahead 2 spaces.	Pesticide use outside park causes water and land pollution, with loss of native plants. Go back 4 spaces.
Local Industry regularly collects information to determine changes in air and water pollution. Go ahead 3 spaces.	There is not enough information on habitat needs for many endangered organisms. Go back 4 spaces.

GAME CARDS 3

Programs to teach the public how we depend on biological diversity for food, medicine, and other products. Go ahead 3 spaces.

More and more humans have the ability to change the ecosystems, weather, and climate. Go back 3 spaces.

Organisms introduced by humans (exotic species) are removed whenever practical. Go ahead 2 spaces.

Parks became more and more like islands as the land outside parks is developed. Go back 4 spaces.

In land purchases, for park, biological diversity of the habitat is taken into consideration. Go ahead 3 spaces.

A common organism that uses the same habitat is trapped and removed to give an endangered species a "head start." Go ahead 3 spaces.

The park informs surrounding landowners about endangered species on their land and the importance of protecting the biological diversity on their property. Go ahead 3 spaces.

There is not enough money to do everything that needs to be done. Go back 4 spaces.

Where necessary, habitats are actively managed to protect species. This may include planting food, burning, controlling water levels, and possibly killing natural predators that are present in high numbers. Go ahead 3 spaces.

Park staff write newspaper articles about endangered species and why they are important. (Endangered gray bats that live in four caves consume "nearly a million pounds of insects in Alabama and Tennessee each summer.") Go ahead 2 spaces.

Habitat conditions for many parks before they were changed by early settlers is not known. Go back 3 spaces.

OBJECTIVES

After completing this exercise the student will be able to

1. read a map to find various locations
2. plot several locations on a map
3. work independently using map reading skills.

GRADES: 6 TO 8

AZ CURRICULUM STANDARDS:
Social Studies Standard 3 - Geography

GROUP SIZE: 25

DURATION: 1 hour

SETTING: Classroom

MATERIALS: PLOTTING PROTECTED PLACES student activity sheet, pencils, rulers.

Educator's Outline for

PLOTTING PROTECTED PLACES

ACADEMIC EXPECTATIONS: Use reference tools and research tools; make sense of a variety of materials they read; use mathematical ideas and procedures; organize information and use of classification rules and systems; understand and use number concepts; understand and use space and dimensionality concepts; understand and use measurement concepts; understand the democratic principles; recognize, apply and understand the relationship between people and geography; show their abilities to become self-sufficient individuals; show their abilities to become responsible members of a family, work group, or community; organize information to develop or change their understanding of a concept; use a decision--making process to make informed decisions; connect knowledge and experiences from different subject areas; use what they already know to acquire new knowledge, or skills, or to interpret experiences; and expand their understanding of existing knowledge.

BACKGROUND: The National Park Service originated with the passage of the Organic Act of 1916. Since that time, the National Park Service and the United States government have designated many places as valuable places to be protected. These places are selected because of their historical or natural significance to our nation. Today, there are over 384 National Park Service areas across the country. These areas include national parks, national monuments, national battlefields, national seashores, national recreation area, and national wild and scenic rivers. In Kentucky, there are four National Park Service areas, including: Mammoth Cave National Park, Abraham Lincoln Birthplace National Historic Site, Big South Fork National River and Recreation Area, and Cumberland Gap National Historic Park. Each National Park Service area has its own unique cultural, biological, and geological significance. Cultural heritage (people), vegetation (plants), wildlife (animals), and landforms (rocks) are the reasons the parks were set aside.

Mapping is a basic skill that requires taking information given in one area and correlating it with another. The correlation gives meaning to new information. As far back as human history can be traced, people have been making and reading maps. This unique way of communication can only be achieved through a medium such as a map.

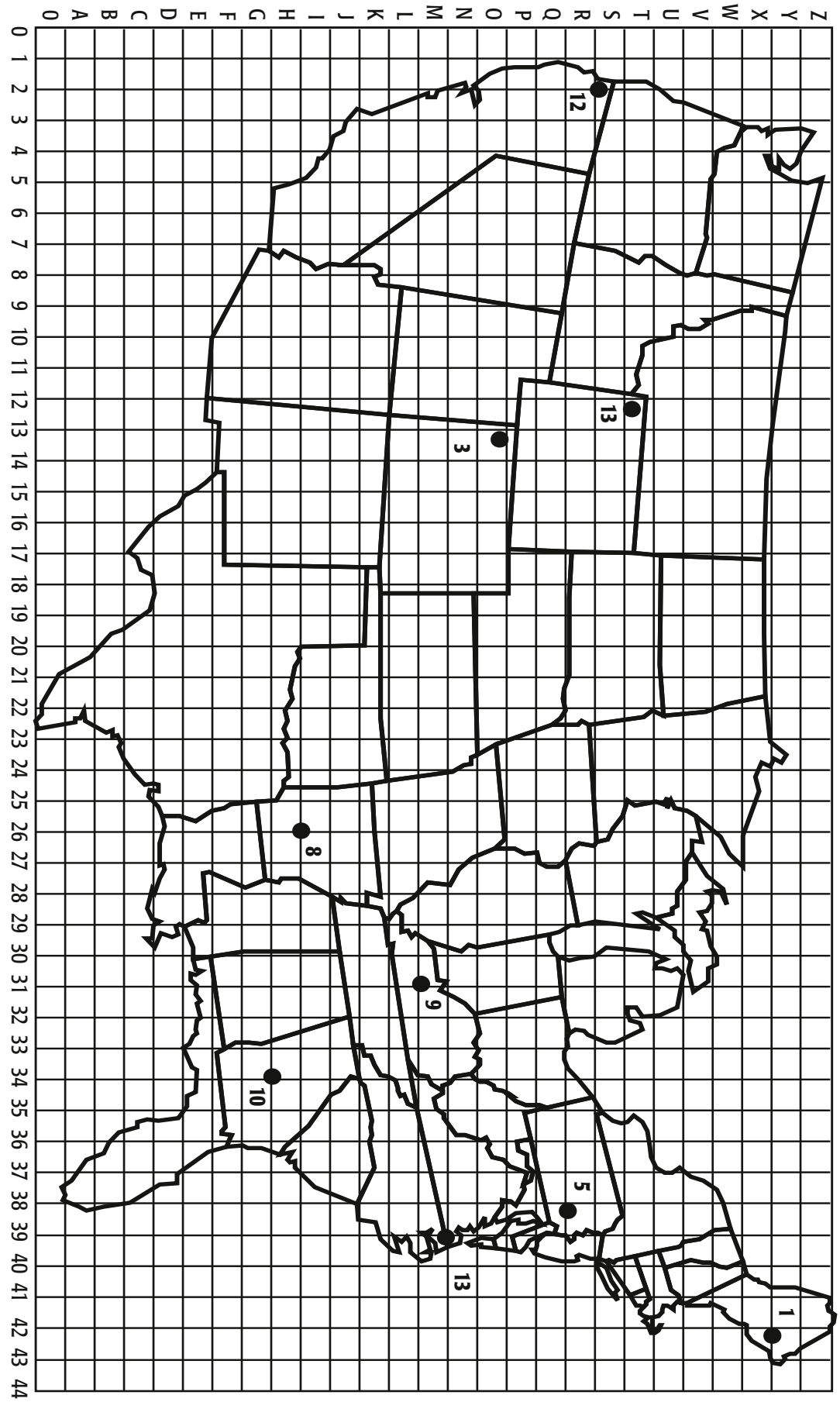
PROCEDURE:

1. The teacher presents the students with a map. The teacher asks the students if they can find a key on the map. The students should read the map and find the directional arrows for north, south, east, and west.
2. The teacher asks the students what National Park Service Area is at 31, M. The students should respond Mammoth Cave National Park.
3. The teacher asks the students, "Where is Yellowstone National Park?" A student responds 12, T.
4. The teacher asks the students to work on the first part of their activity page, numbers 1 to 4.
5. Together, the class reviews the answers to the first half of the activity sheet.
6. The teacher and students review the second half of the activity sheet. The teacher points out that there is a map that will help the student to plot the parks listed in the second half of the activity.
7. The students work individually on the second half of their sheet.
8. The class reviews this part of the activity sheet.
9. The teacher then asks the students one final question: If you could create a park anywhere in the United States, at what coordinates would you place it? What plants, animals, people, and rocks would your park protect? In a few sentences, describe your park at the bottom of your activity sheet.
10. The students share their created parks, if they choose to do so.

EXTRA CREDIT:

1. The teacher could have the students look at a United States road map, and map out a vacation to several different parks. The students could then list the coordinates from that map for each national park.
2. The students could create a graph of their classroom, plotting various items in the room.
3. The students could take a look at a Kentucky map and find the four national park areas that are within its borders. Then, they could look at the coordinates of the national parks found on that map. They could also find their town on the map. The students could then measure the distance from each park to their hometown.
4. The students could select a favorite National Park Service site, and could investigate that area via Internet or mail.

STUDENT WORKSHEET: PLOTTING PROTECTED PLACES



PLOTTING PROTECTED PLACES KEY

Name: _____ Date: _____

MAP INDEX:

INDEX #	NATIONAL PARK SERVICE SITE	COORDINATES
1	Acadia National Park	43, X
2	Big Bend National Park	17, D
3	Dinosaur National Monument	13, P
4	Everglades National Park	38, B
5	Gettysburg National Military Park	38, O
6	Glacier Bay National Park	11, Y
7	Grand Canyon National Park	10, K
8	Hot Springs National Park	26, I
9	Mammoth Cave National Park	31, M
10	Martin Luther King, Jr. National Historic Site	34, H
11	Mount Rushmore National Memorial	18, S
12	Redwood National Park	2, S
13	Wright Brothers National Memorial	39, N
14	Yellowstone National Park	12, W
15	Yosemite National Park	4, N

PLOTTING PROTECTED PLACES

DIRECTIONS:

1. Mammoth Cave National Park is the site of the longest know cave system in the world. Its' coordinates are 31, M. Find a dot on the map at these coordinates, and put Mammoth Cave National Park's index number by it. Index number _____.

2. National parks were developed to take care of all resources inside its boundary lines. These resources include vegetation (plants), wildlife (animals), cultural history (people), and landforms (rocks). Can you list a park from the index for each topic?

   Vegetation:

   Wildlife:

   Cultural History:

   Landforms:

Note: Each park protects everything in its boundary, but some answers are better than others.

3. On the map, which park is farthest east? What are its coordinates?

4. Name the two parks in California and their coordinates.

5. Add these parks to your map.

   - Everglades National Park
   - Grand Canyon National Park
   - Yosemite National Park,
   - Big Bend National Park
   - Mount Rushmore National Memorial

6. On the map, which park is farthest south?

What are its coordinates? _____

7. Which park is known for its famous inventors?

What are its coordinates? _____

*BONUS: What was the famous invention?

8. California is the state with the most National Park Service sites. Put parallel lines (/ / /) through the state to mark that it has the most sites.

9. Delaware is the only state without any National Park Service sites. Shade Delaware with your pencil.

10. Look at your index. There are no coordinates listed for Glacier Bay National Park. Can you find its index number on the map? Why or why not?

Your map shows only a few National Park Service sites. There are currently over 365 National Park Service areas.