

## **ARIZONA TOPIC SUMMARY**

### **Recreational Impacts on Natural Resources**

Recreation, whether active or passive, is vitally important to everyone and offers physical, emotional, and spiritual benefits. The amount of time and money people spend on recreation is rising, along with the diversity of recreational opportunities.

What impacts might these have upon the natural world? We need to more fully examine their 'footprints' upon our natural resources. This is especially true in the arid West, particularly in AZ where...

- The Sonoran, Mohave, Great Basin, and Chihuahuan Deserts together cover much of Arizona.
- The largest stand of ponderosa pine forest on the continent stretches from near Flagstaff along the Mogollon Rim to the White Mountains region.

Webster's defines recreation as "refreshment in body or mind, as after work, by some form of play, amusement, or relaxation" and includes games, hobbies, sports, and other activities. For our purposes, we will narrow the focus to outdoor activities within a natural setting. Examples for Arizona include hunting, fishing, hiking and backpacking, skiing, mountain hiking, rock climbing, rafting and kayaking, bird watching, and cultural observations/explorations. These may be low or high-tech, low or high impact, and require little or strenuous physical exertion. No matter the form of recreation, humans are consumers and leave behind some trace upon the earth. This 'trace' often grows considerably as the number of people using that resource increases and can negatively impact vital natural resources.

Recreation is important to the economy. Consider these statistics for Arizona: in 2005, according to the National Park Service, more than 11.5 million people visited Arizona's 21 National Parks and National Monuments. According to Dr. John Silberman from Arizona State University West, fishing and hunting alone generated nearly \$1 billion in retail sales for 2001. Applying this data to Arizona's economy, these sales provided a statewide economic impact of \$1.34 billion, which supported 17,190 jobs, created \$314 million in household income, and added \$58.2 million to annual state tax revenues... just for hunting and fishing in Arizona! And, Dr. Silberman indicates that economic significance is tied to the location and natural resource as well.

How might recreation impact natural resources? One impact often gives rise to more, creating a cascading effect that may become difficult for land managers to control. Changes in water quality and alteration of surface flows impact water. Compaction and erosion often degrade soils. Nonnative flora and fauna can be introduced into the ecosystem, causing shifts in the balance from native to nonnative species. The frequency of wildfire can change, causing shifts in the flora and fauna of an area. Recreation leads to an increase in the use of energy, especially fossil fuels, leading to air and water pollution. Noise pollution may alter natural range and habitat especially critical to sensitive species. And, how do we manage human waste that is a by-product of our lifestyle?

These are only a few of the potential impacts. And, all are intertwined. A prime example: as soils are disturbed they may erode with resulting debris creating runoff into nearby streams, thus changing the water quality. The change in water quality may have serious repercussions for native species that rely on cleaner water. Nonnative species may out compete native species if they can tolerate the sediment load while the natives do not. This, of course, is a simplified version of a possible chain of events. In reality, the impacts are far more extensive and complicated.

Some questions to ponder:

- What is your favorite recreational activity? How do you think this activity impacts natural resources? How might you reduce any negative impacts that directly or indirectly result from this pastime?
- What might be the impact of limiting certain recreational activities? Is preservation (no use) better than conservation (managed use)? How can we manage use in order to minimize negative impacts?
- In the face of increasing demand for both traditional and new forms of recreation, how can we balance our need to enjoy the natural world with maintaining the quality of the environment?
- Although recreation can add significantly to both local and state economies, are there options through preservation and conservation to offset the losses due to decreased recreation?

**Learning Objectives: "Recreational Impacts Upon Natural Resources"**  
**2008 CANON ENVIROTHON Issue**

**GOAL**

Students will analyze long term and short term environmental, social, and economic factors relative to recreational impacts upon natural resources and their management.

**ACTIVITIES**

- Students will analyze the availability of natural resources and the diversity of biotic communities, focusing upon factors that invite outdoor recreational users.
- Students will research and identify recreational impacts upon natural resources, focusing upon their environmental implications.
- Students will examine unique challenges for natural resource managers in Arizona, due to its aridity, prolonged drought, and burgeoning human population and focusing on management concerns in the face of increasing recreation..
- Students will identify key stakeholders in the business of recreation and tourism, including values and positions each holds toward outdoor recreation and natural resources.
- Students will describe interconnectedness between socio-economic, technological, and ecological aspects of recreation.

**OUTCOME**

Students will be able to recommend action relative to a natural resource management challenge that will:

1. minimize adverse impacts to natural resources
2. build consensus among key stakeholders
3. accommodate diverse audiences
4. contribute positively to the economic impact of a specified geographical region.

## **Outcomes and Indicators: "Recreational Impacts Upon Natural Resources"** **2008 CANON ENVIROTHON Issue**

### **I. Biotic communities and environmental factors**

Investigate the biodiversity of northern Arizona by:

- identifying, comparing and contrasting the flora, fauna, of the following life zones: alpine tundra, fir forest, pine forest, oak-pine woodland, riparian systems, grasslands.
- analyzing natural ecological factors of each community to determine its suitability for river/aquatic recreation, terrestrial recreation, aerial recreation.

### **II. Recreation in arid climates**

Analyze the current and potential recreational impacts upon an area by:

- identifying factors that attract recreation/tourism to an area, including proximity/access to travel, quality of destination site, amenities, suitability for intended purpose, safety.
- analyzing values and attitudes toward tourism from the perspective of various stakeholders: local residents, local businesses, local and regional land managers, state agencies, federal agencies.

### **III. Recreational impacts upon natural resources**

Assess known and potential environmental impacts created by recreation by:

- examining land usage and soil patterns following recreational activity or anticipated to be caused by future activity.
- analyzing historic and contemporary cultural attitudes toward ecological, social, and technological concerns.
- examining current and predicted water quality and quantity issues.
- considering wildlife needs and concerns of wildlife managers.
- examining relationships between the native and non-native vegetation of an area.
- evaluating data to estimate and recommend a future management plan for a selected site.

## **Resources and Contacts: "Recreational Impacts Upon Natural Resources"** **2008 CANON ENVIROTHON Issue**

### **Biotic communities and environmental factors**

Arizona Game and Fish Department

<http://explore.azgfd.gov/> (biotic communities of Arizona)

Grand Canyon National Park

<http://www.nps.gov/grca/naturescience/index.htm> (Nature & Science, includes plants, animals, environmental factors, and Natural Features and Ecosystems)

Views of the National Parks

<http://www2.nature.nps.gov/views/> (from this site click on multimedia version, this will open up another window. Note information for Fort Bowie, Grand Canyon National park, Tonto National Monument.)

## **Recreation in arid climates**

Arizona Game and Fish Department

[http://www.azgfd.gov/outdoorj\\_ecreation/outdoorrecreation.shtml](http://www.azgfd.gov/outdoorj_ecreation/outdoorrecreation.shtml)

FirstGov

<http://www.recreation.gov/index.jsp> (As of 2/7/2007, "one\_stop shopping" for federal outdoor recreation reservations; information on numerous outdoor activities)

Arizona State Parks

<http://www.pr.state.az.us/> (information about Arizona's State Parks)

Arizona Office of Tourism

<http://www.arizonavacationvalues.com> (request free visitor's guide; information on nature-related recreational opportunities)

National Forest Service

<http://www.fs.fed.us/> ("Recreational Activities" by state)

## **Recreational impacts upon natural resources**

### **Economic impacts**

Michigan State University

<http://web4.canr.msu.edu/mgm2/default.htm> (Economic Impacts of Grand Canyon National Park Visitor Spending on the Local Economy, 2003)

### **Historic and Cultural impacts**

National Park Service

<http://www.nps.gov/grcahistoryculture,index,him> (History & Culture, includes cultural features, both historical and prehistoric)

### **Ecological impacts**

Leave No Trace

[http://www.lnt.org/programs/lnt7\\_index.html](http://www.lnt.org/programs/lnt7_index.html) (LNT principals)

Grand Canyon National Park

<http://www.nps.gov/grca/parkmgmt/cnnp.htm> (Park Planning, includes General Management Plan, North Rim Development Plan, and Colorado River Management Plan)

Bureau of Land Management

<http://www.blm.gov/education/LeamingLandscapes/menu/states/arizona.htm/> (information on outdoor opportunities available on public lands in Arizona \_ with links to other states)

Sonoran Desert National Monument

<http://www.sonoran.org/programs/pdfs/SDNM%20Rec%20Impacts.pdf> (Sonoran Desert National Monument Recreation Impact Inventory \_ Final Report)