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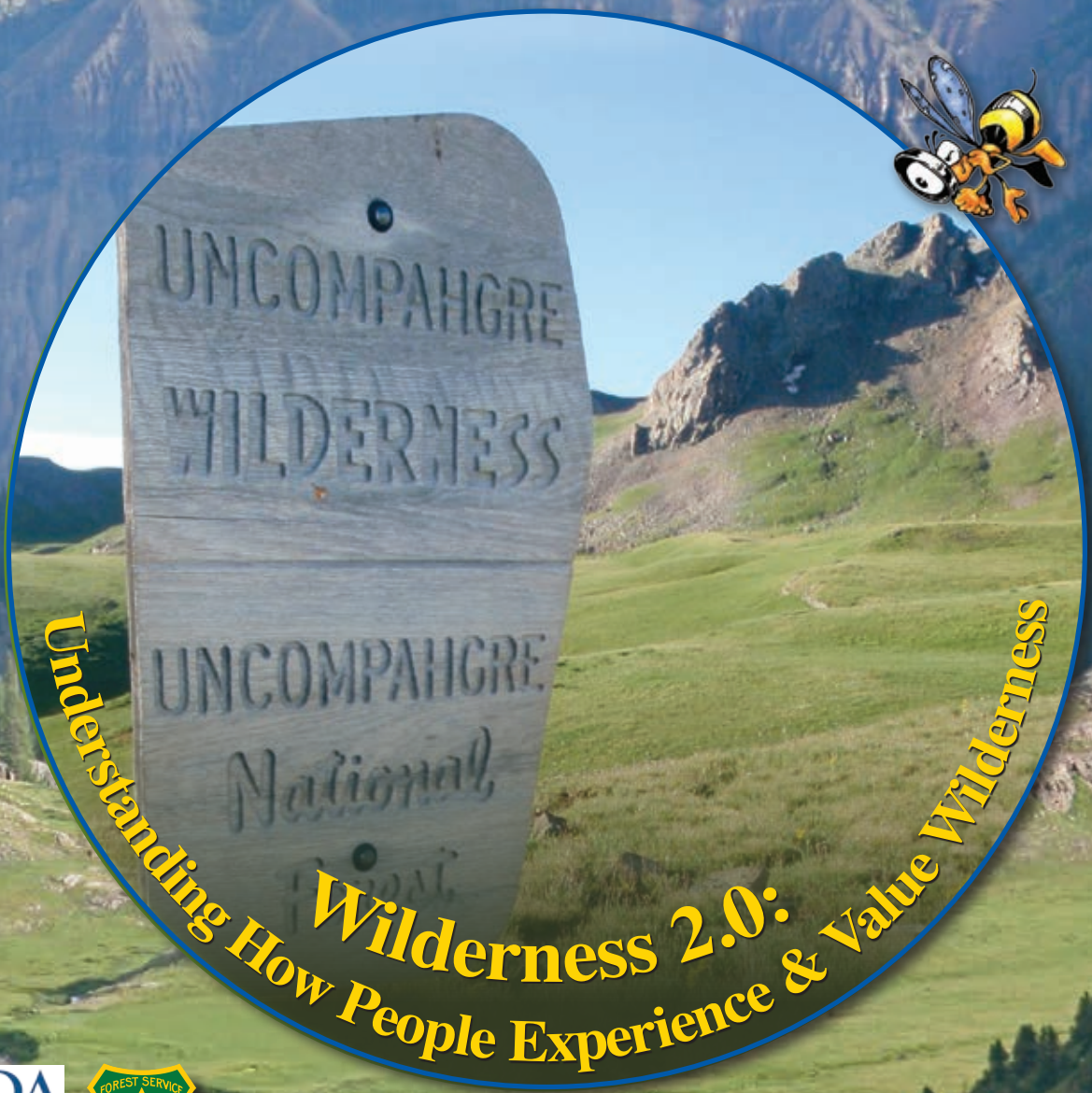

Wilderness 2.0:
Understanding How People Experience & Value Wilderness

USDA

FOREST SERVICE
US
DEPARTMENT OF AGRICULTURE

The *Natural Inquirer*

Monograph Series

Wilderness 2.0: Understanding How People Experience & Value Wilderness

Produced by

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Cradle of Forestry in America Interpretive Association

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FEATURE:

Wilderness 2.0:
Understanding How People Experience & Value Wilderness

Photo by Elaine Wells.

Join us in being green!

Join us in being green! The following Educator Resources are now available exclusively on the *Natural Inquirer* Web site, **http://www.naturalinquirer.org.** Click on the "Wilderness 2.0" cover or go to "Educator Resources" to access these resources:

- Note to Educators
- Lesson Plan for "Wilderness 2.0"
- Wilderness 50 Lesson Plan
- Wilderness 2.0 Reflection Section Answer Guide

Who Are Scientists?

Scientists are people who collect and evaluate information about a wide range of topics. Some scientists study the natural environment.

To be a successful scientist, you must:

Be curious:
Are you interested in learning?

Be enthusiastic:
Are you excited about an environmental topic?

Be careful:
Are you accurate in everything that you do?

Be open-minded:
Are you willing to listen to new ideas?

Question everything:
Do you think about what you read and observe?

Welcome to the *Natural Inquirer* Monographs!

Scientists report their research in a variety of special books. These books enable scientists to share information with one another. A monograph is a book about research that focuses on a single science project. This monograph of a *Natural Inquirer* article was created to give scientists the opportunity to share their research with you and other middle school students. The monograph presents scientific research conducted by scientists in the Forest Service, an agency of the U.S. Department of Agriculture (USDA). If you want to learn more about the Forest Service, you can read about it on the inside back cover of this monograph, or you can visit the *Natural Inquirer* Web site at http://www.naturalinquirer.org.

All of the research in this *Natural Inquirer* monograph is concerned with the natural environment, such as trees, forests, animals, insects, outdoor activities, and water. To introduce you to this monograph, you will first "meet the scientists" who conducted the research. Then you will read about one of the many interesting aspects of science and about the natural environment. You will also read about a specific research project. (The research article in this monograph is written in the format that scientists use when they publish research in scientific journals.) Then YOU become the scientist as you go through the FACTivity associated with the article. The glossary and the special sections highlighted in the article give you extra information that is educational and interesting.

At the end of each section of the article, you will find a few questions to help you think about what you have read. These questions will help you think like a scientist. They will help you think about how research is conducted. Your teacher may use these questions in a class discussion, or you may discuss these questions in a small group.

Each *Natural Inquirer* monograph will help you explore the exciting world of science and prepare you to become a young scientist. You will learn about the scientific process, how to conduct scientific research, and how to share your own research with others.

Visit **http://www.naturalinquirer.org** for more information, articles, and resources.

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Brethren Middle School, Brethren, Michigan
Teachers:
Ms. Gail Bennett
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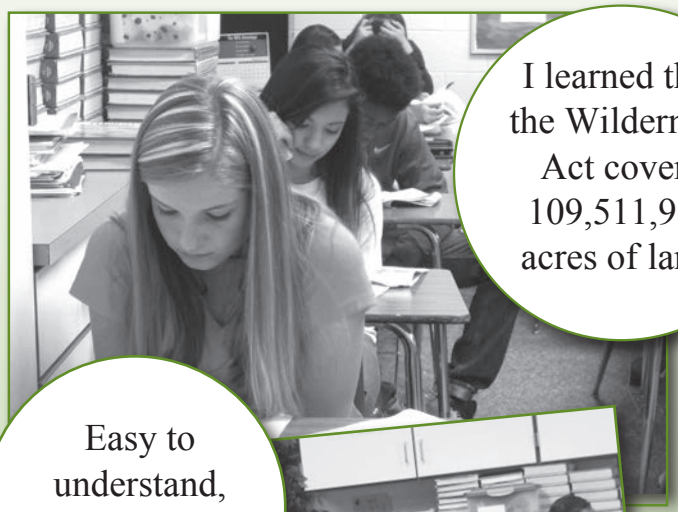
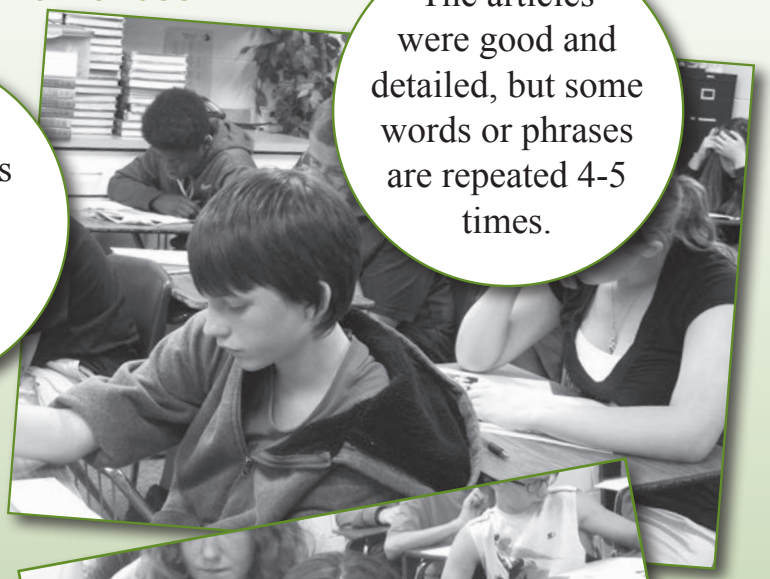
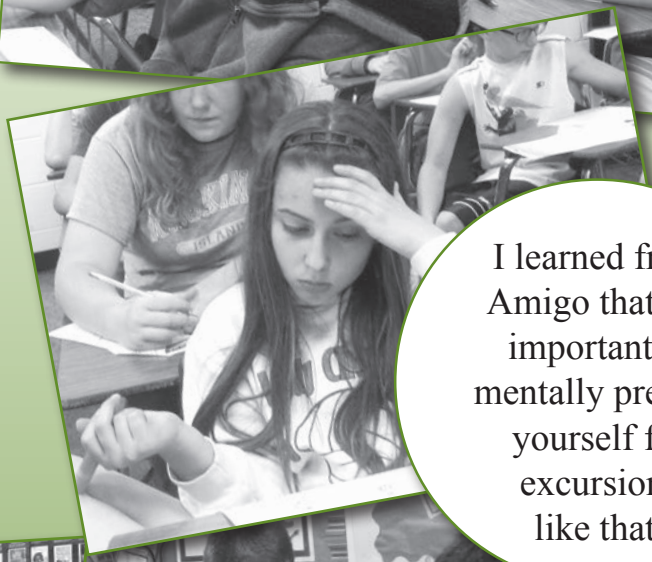


I learned that the Wilderness Act covers 109,511,966 acres of land.



The articles were good and detailed, but some words or phrases are repeated 4-5 times.

Easy to understand, could use color.



I learned from Amigo that it's important to mentally prepare yourself for excursions like that.

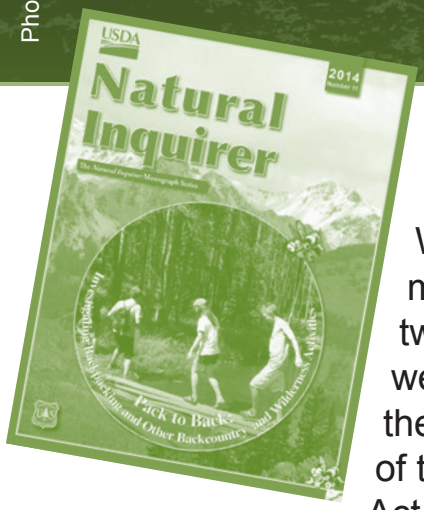
I learned what a social scientist was.

If you can, don't make the reflection section as big.

Photo by Andrew Maher.

WELCOME TO THE WILDERNESS 50 MONOGRAPHS!

Glossary words are in **bold** and are defined on page 30.



This monograph is one of two Wilderness 50 monographs. These two monographs were created to honor the 50th anniversary of the Wilderness Act of 1964. You can read the other Wilderness monograph, "Pack to Back," by visiting http://www.naturalinquirer.org. At this Web site, you can download the monograph or order a hardcopy of the monograph for free. "Pack to Back" explores the recreational use and value of wilderness. Wilderness areas provide important settings for outdoor recreation.

Wilderness Timeline:

The idea of protecting lands as wilderness did not happen overnight. Before the National Wilderness Preservation System was established in 1964, many people took actions that helped Americans understand the value of protecting wild lands. Since 1964, other people have continued to ensure the protection of more wilderness areas.

1822: Pawnee Chief Petalesharo (**pə** tə lə **shə** rō) presented a speech to President James Monroe. He described the way of Indian life and noted that numbers of game animals such as buffalo were decreasing because of human settlement and exploration.

1827: Thomas Cole, a leader in the romantic landscape painting movement known as the Hudson River School, produced "St. John Preaching in the Wilderness." Cole believed that wilderness was passing away and that there was a "necessity of saving and perpetuating its features."

1836: Ralph Waldo Emerson published "Nature." His essay helped Americans develop positive attitudes toward nature.

When Congress passed the Wilderness Act of 1964, nearly every member of the Congress voted in favor of the act. The law, created by the passage of the act, permanently protects some of the most natural and undisturbed places in America (figure 1). The act is one of the most successful U.S. environmental laws. It continues to be the guiding piece of legislation for all wilderness areas.

Figure 1. Wolf Island Wilderness in Georgia was designated as wilderness in 1975. The wilderness includes Wolf Island, Egg Island, and Little Egg Island. This wilderness area is a sanctuary for **migratory** birds, and more than 75 percent of the wilderness is saltwater marshes.

Photo by Jane Griess, U.S. Fish & Wildlife Service, and courtesy of http://www.wilderness.net.

Wilderness Timeline *continued*

1837: George Catlin called for "a nation's park" to protect the American Indian way of life.

1854: Henry David Thoreau, author of *Walden*, wrote that wilderness sanctuaries are the "need of civilized man."

1864: George Perkins Marsh published *Man and Nature*, warning citizens to stop the devastation of forests and other natural resources.

1864: President Abraham Lincoln signed the Yosemite Bill, "to protect an area and conserve it for recreational enjoyment." This bill marked the first time a national government set aside land for the purpose of conservation.

1865: Frederick Law Olmstead pushed for protection of Yosemite Valley (California) and was first to advance the idea of placing certain areas under government protection.

President Lyndon Johnson signed the Wilderness Act into law on September 3, 1964. Following the establishment of the Wilderness Act, other countries around the world have also protected natural areas. Few of these other areas worldwide, however, have the same level of protection from human activities as American wilderness areas.

Section 2(c) of the Wilderness Act of 1964 describes wilderness as follows:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are **untrammeled** by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its **primeval** character and influence, without permanent improvements or human **habitation**, which is protected and managed so as to preserve its natural conditions; and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for **solitude** or a **primitive** and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Be sure to read the *Natural Inquirer* Wilderness Benefits edition. You can find it at http://www.naturalinquirer.org/Wilderness-Benefits-Edition-i-11.html.

1885: The New York State Legislature created the Adirondack Forest Preserve "to be kept forever as wild forest lands," along with similar lands in the Catskill Mountains.

1892: John Muir organized the Sierra Club in California to enlist public and governmental support for preservation of wilderness. The Sierra Club remained a State group until the 1950s, when David Brower convinced the group to think nationally.

1898: Gifford Pinchot took office as Chief of the Division of Forestry, later organized into the National Forest Service in 1905. Today, this agency is known as the Forest Service, an agency of the U.S. Department of Agriculture.

Howard Zahniser (**zah(n)** ī zər), author of the Wilderness Act of 1964, selected the word "untrammeled" to define wilderness. Many people read the word "untrammeled" as "untrampled," as in not stepped on. Yet the word "untrammeled" means something much different. A "trammel" is a net used for catching fish, or a device used to keep horses from walking. To trammel something is to catch or restrain it. Untrammeled means something is free or unrestrained. Wilderness areas, therefore, are not to be controlled by humans. Zahniser defined "untrammeled" in the Wilderness Act

WILDERNESS FUN FACTS

- When the Wilderness Act of 1964 was passed, it protected 9.1 million acres of wilderness in 13 States.
- On the 50th anniversary of the Wilderness Act, the act now protects 109,511,966 acres of wilderness in 44 States and Puerto Rico.
- The smallest wilderness is Pelican Island Wilderness in northern Florida. This wilderness contains 5.5 acres of land and water.
- The largest wilderness is Wrangell-Saint Elias Wilderness in Alaska. This wilderness contains 9,078,675 acres.
- Only Connecticut, Delaware, Iowa, Kansas, Maryland, and Rhode Island have no designated wilderness areas.
- The newest wilderness area is Sleeping Bear Dunes in Michigan. It became an official wilderness area on March 13, 2014.

For more information about wilderness areas, visit http://www.wilderness.net.

Wilderness Timeline *continued*

1903: President Theodore Roosevelt protected vast acres of Federal land for public use and conservation.

1906: President Roosevelt signed the Antiquities Act into law. This law gives the President the authority to protect public land by Executive order. In 1906, President Roosevelt used the law to create the Grand Canyon National Monument, which later became the Grand Canyon National Park.

1919: Arthur Carhart recommended that the Trappers Lake area in Colorado not be developed for summer homes and that it be allowed to remain wild. His plan was approved.

1924: Aldo Leopold's work resulted in the designation of the first official wilderness area. This area is the Gila (**hē** la) Wilderness in New Mexico.

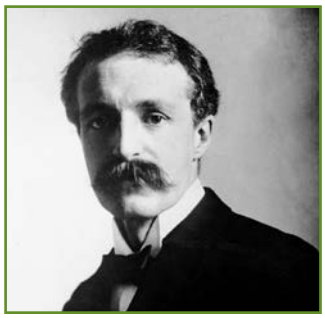
as "*not being subject to human controls and **manipulations** that hamper the free play of natural forces.*"

The wildness of wilderness areas provides many unique opportunities for people. In this monograph, research is presented about the experiences of a 16-year-old boy in a Colorado wilderness and how he used technology to blog about his wilderness experiences.

Information adapted from http://www.wilderness.net/.

Aldo Leopold is considered by many to be the father of the U.S. wilderness system.
Photo courtesy of http://www.outdoorhub.com.

President Johnson signed the Wilderness Act of 1964 into law with overwhelming support from Congress.
Photo courtesy of http://www.wildernessstewardship.org.



Gifford Pinchot (pin **chō**) promoted the conservation of the United States' forests by planned use and renewal. He was the first leader of what is now the Forest Service.
Photo courtesy of http://www.seekinggreatestgood.org.

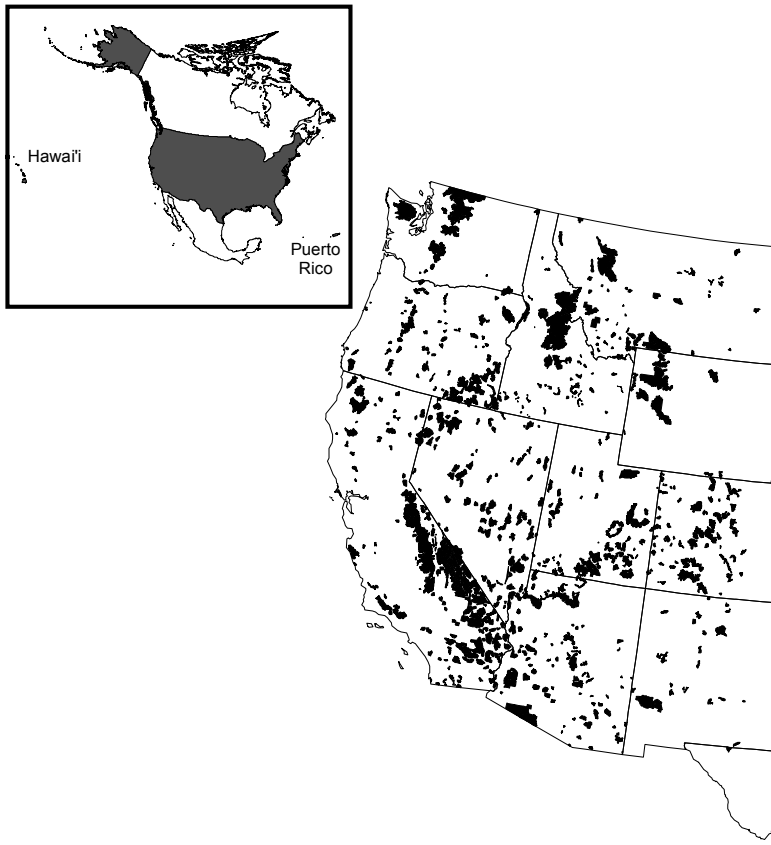
Rachel Carson is recognized as one of the founders of the modern environmental movement.
Photo courtesy of U.S. Fish and Wildlife Service.

1935: Bob Marshall, Aldo Leopold, Benton MacKaye, and others founded The Wilderness Society as a national organization based in Washington, DC, to specialize in advocating wilderness protection.

1962: Scientist Rachel Carson published *Silent Spring*, stirring public awareness of pesticides and the environment.

1964: President Lyndon Johnson signed the Wilderness Act into law, creating the National Wilderness Preservation System, which protected 9 million acres of wilderness (figure 2, pages 12-13).

1970: Senator Gaylord Nelson founded Earth Day, focusing national attention on the environment.



Alaska, Hawai'i, and Puerto Rico are not drawn to scale.

Wilderness Timeline *continued*

1972: President Richard Nixon signed legislation designating the Scapegoat Wilderness in Montana. This wilderness was the first wilderness area to be designated by Congress because of a grass-roots citizens effort.

1975: President Gerald Ford signed the Eastern Wilderness Areas Act, protecting 207,000 acres of wilderness on national forests in the East, South, and Midwest. With this act, Congress rejected the view that once-logged or once-inhabited lands can never qualify for Wilderness Act protection.

1978: President Jimmy Carter signed the Endangered American Wilderness Act. With this act, 1.3 million acres of national forest lands across the West were designated as wilderness, all on the basis of proposals initiated by local citizens groups.

Figure 2. The National Wilderness Preservation System. Find the wilderness area nearest to you. For more wilderness maps and to identify the name of the wilderness closest to you, visit http://www.wilderness.net/NWPS/maps.

1984: President Ronald Reagan (who signed more individual wilderness protection laws than any other President) signed wilderness laws for 22 States in a single year, protecting some 8 million acres.

2001: President William Clinton's Roadless Area Conservation Rule was adopted. This rule protected some 60 million acres of "roadless areas" on national forests, much of which local citizen groups had hoped to see Congress preserve as wilderness.

2005: President George W. Bush signed into law wilderness protection for 11,000 acres of desert canyon lands in northwestern New Mexico and 10,000 acres of tropical rain forest in Puerto Rico—the only tropical rainforest in America's National Forest System.

Photo by Elaine Wells.

Photo by Andrew Maher.

Photo by Andrew Maher.

Photo by Ken Straley, Forest Service.

Wilderness Timeline *continued*

2009: President Barack Obama signed into law the Omnibus Public Land Management Act of 2009. This bill protected 2.1 million acres of new wilderness areas in California, Colorado, Idaho, Michigan, New Mexico, Oregon, Utah, Virginia, and West Virginia.

2014:

50th Anniversary of the Wilderness Act of 1964.

Time Line information is from http://www.nature.nps.gov/views/KCs/Wilderness/HTML/ET_04_Why.htm and http://www.scotchmanpeaks.org/history-of-wilderness-progress/.

Meet the Scientists!

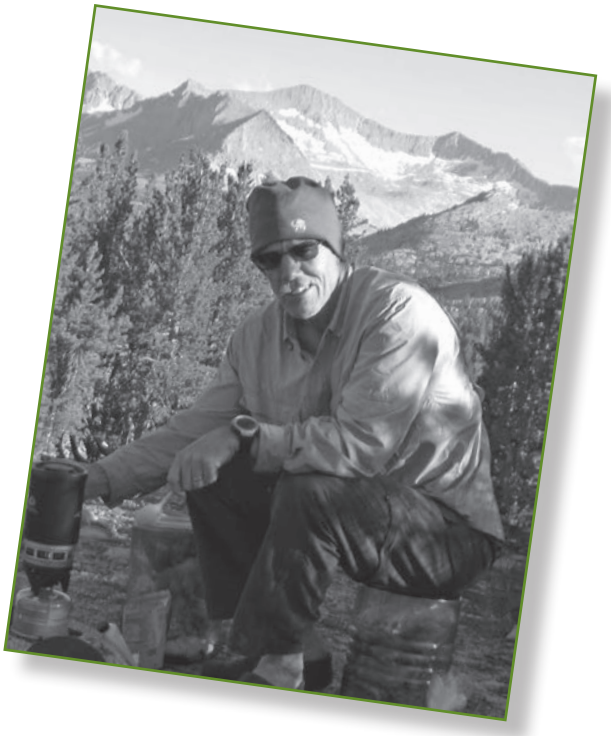
◀ Dr. Joseph Champ, Media Scholar

My favorite science experience was interviewing families in Colorado about their relationship with the environment. I found that many of them were experiencing the natural world by way of **mass media**—things like watching *Animal Planet* shows and thumbing through *National Geographic* magazine. It made me wonder: Is this a good thing or a bad thing? Mass media bring us images and sounds of nature we might never see and hear in person. But what if the media is replacing our face-to-face encounters with Earth and its creatures?

▶ Dr. Daniel Williams, Research Social Scientist

My favorite science experience is that, as I study how people use nature and wilderness, I also get to experience many of these same great places as part of my fieldwork. This photo shows me on a recent backpacking trip in Kings Canyon National Park, California.

Photo by Mike Patterson.



What Kind of Scientists Did This Research?

- **media scholar:**
  This scientist studies the content, history, and effect of different types of mass media. Mass media are means of communication, such as newspapers, magazines, and other online communication, which reach a wide variety of people.

- **research social scientist:** This scientist studies human societies and human behaviors.

Thinking About Science

There are many different types of scientists. One type of scientist is a social scientist. Social scientists study individuals or groups of people. Instead of working with chemicals and microscopes, environmental social scientists study the relationship of individuals or groups with their natural environment.

The social scientists in this study examined Web-based trip reports about people's experiences in the wilderness. The scientists chose one report in particular to use as a case study. A case study is a way that scientists conduct research to examine a particular person, group, or event. In this research, the scientists wanted to look at a particular case study because this case study contained many of the same themes as the other trip reports they examined. Therefore, the scientists could take the common themes they found across all the trip reports they examined and specifically discuss the themes based on the case study trip report.

Thinking About the Environment

In 1964, the United States Congress passed the Wilderness Act. This act established the U.S. National Wilderness Preservation System (NWPS). The NWPS now **encompasses** 109,511,966 acres (figure 1). While this may seem like a big number, the number accounts for only 5 percent of the entire United States. The State of Alaska actually contains a little more than one-half of the total wilderness area in the United States (figure 2).

Figure 1. The U.S. National Wilderness Preservation System, encompasses 109,511,966 acres. To see a map of the whole NWPS, go to pages 12–13. This photo is of High Uintas Wilderness located in northeastern Utah. This wilderness was named for the Uintaat Indians, early relatives of the modern Ute Tribe.

Photo by Cordell Andersen, http://www.wilderness.net.

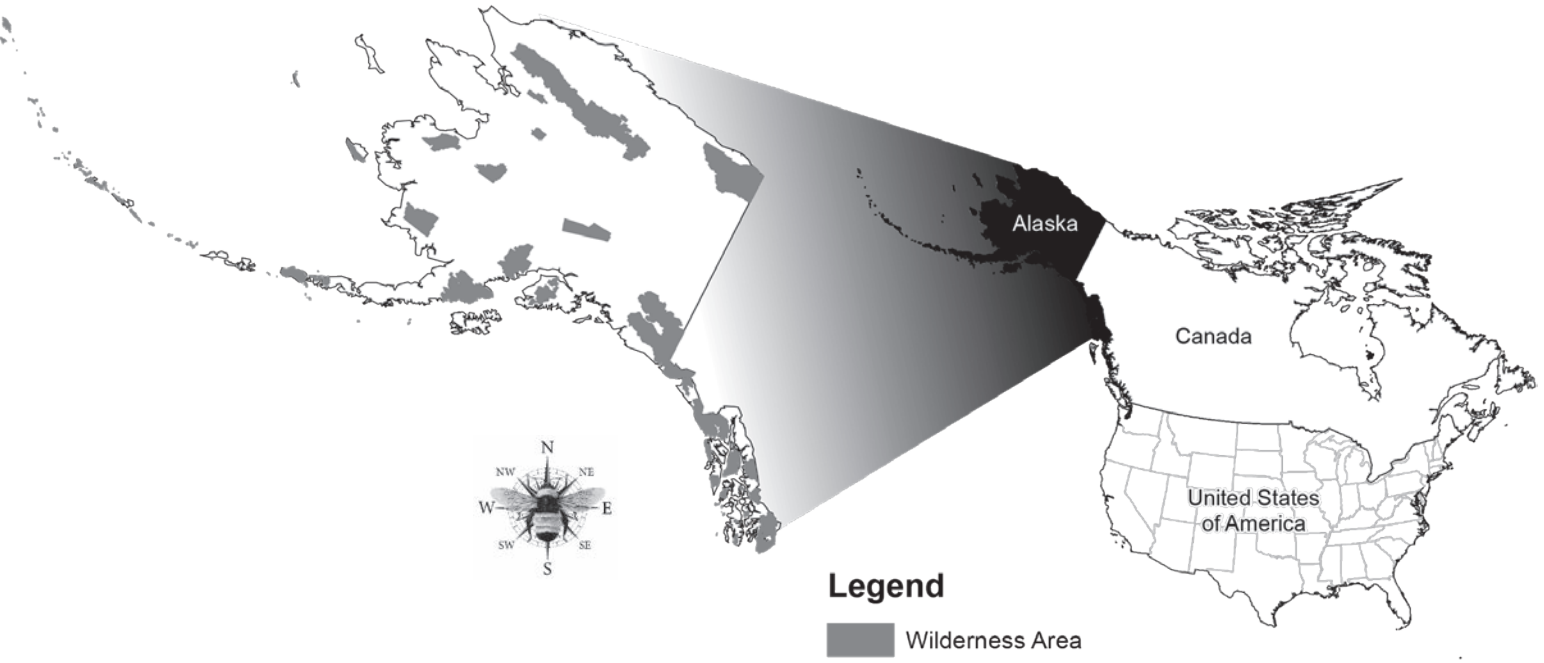


Figure 2. Alaska contains 57,425,992 acres of wilderness. This amount is 52 percent of the total acres of U.S. wilderness.

Number Crunch

An acre is slightly smaller than an American football field. About how many football fields are equal to the number of acres in the NWPS?

Wilderness is defined as an "untrammeled" area. "Untrammeled" means that these lands are free from human control. No developments such as houses or restaurants are allowed in wilderness areas (figure 3). In addition, no motorized or mechanical equipment, such as bicycles, cars, or snowmobiles, are allowed in wilderness areas. The wildness of these wilderness areas provides many benefits to humans. Some examples of the benefits include **ecosystem services**, scientific values, geological values, educational values, **aesthetic** values, historical and cultural values, and recreational values. For more information about each of these values, read the Wilderness Benefits *Natural Inquirer*.

Figure 3. Organ Pipe Cactus Wilderness. Wilderness areas are valued for many reasons, including educational, historical, and aesthetic values.
Photo by Jon Andrew, National Park Service and http://www.wilderness.net.

Introduction

Sharing experiences is an important way for people to think about experiences they have had and better understand how those experiences relate to their entire life. Sometimes people talk with others about their experiences, sometimes people write about their experiences, and sometimes people do both. When people write about their experiences, they may choose to write journal entries. Some people use paper and pencils to record their thoughts, while others may use a computer. Some people use a Web-based form of journaling commonly known as blogging. One specific form of a blog is a trip report.

The scientists in this study were interested in how people share their wilderness experiences and how this sharing affects a person's relationship with wilderness. One way people share their experiences is through trip reports that they write and publish on the Internet. The trip reports contain information about which wilderness area the person (or people) went to and what they did during the time they were in the wilderness. The trip reports often include photos, videos, and maps. The scientists wanted to figure out what was the potential of the trip reports for providing useful information about an individual or group's experience with wilderness areas.

Reflection Section

Think about a time that you have shared an experience with someone either verbally or through written, photographic, or online communication. Why did you share this experience? How do you think sharing this experience helped you?

In your own words, describe what the scientists were interested in studying.

Methods

The scientists studied trip reports from four wilderness areas in Colorado. The four areas were the Uncompahgre (un cȯm **pa** grā) Wilderness, Indian Peaks Wilderness, Holy Cross Wilderness, and Flat Tops Wilderness (figure 4). These areas were chosen for their diversity from each other. Indian Peaks is popular and many people go there (figure 5a and 5b). Holy Cross is farther from populated areas and fewer people go there. Uncompahgre is the most **remote** wilderness area out of the four areas studied (figure 6). Flat Tops is much less **rugged** than the other wilderness areas. The scientists found and analyzed 322 trip reports between March 2009 and October 2010.

The scientists got together for 12 meetings during the process of reading and **analyzing** the reports to make sure that they were analyzing the reports the

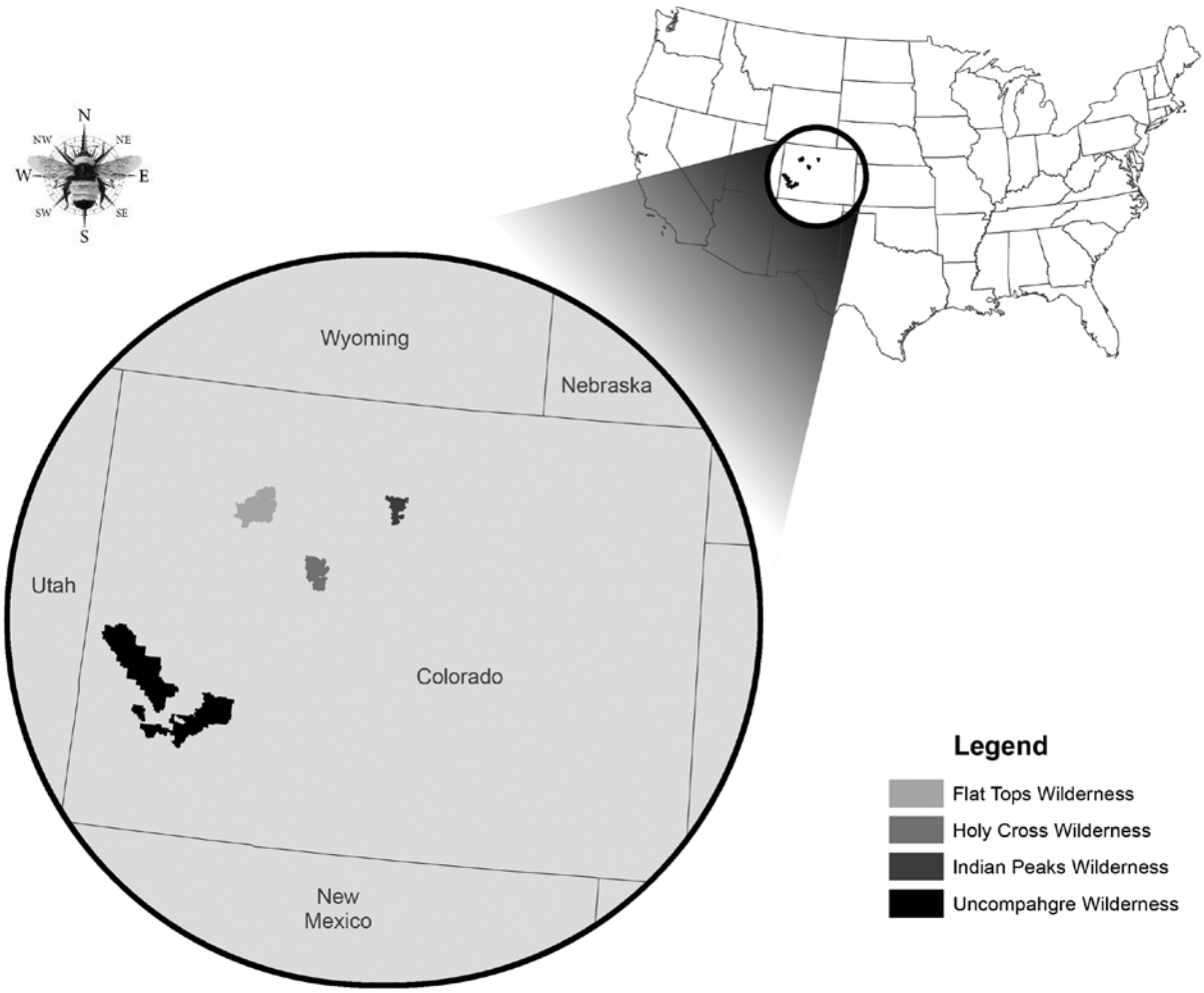


Figure 4. Uncompahgre, Indian Peaks, Holy Cross, and Flat Tops Wilderness Areas are located in Colorado.

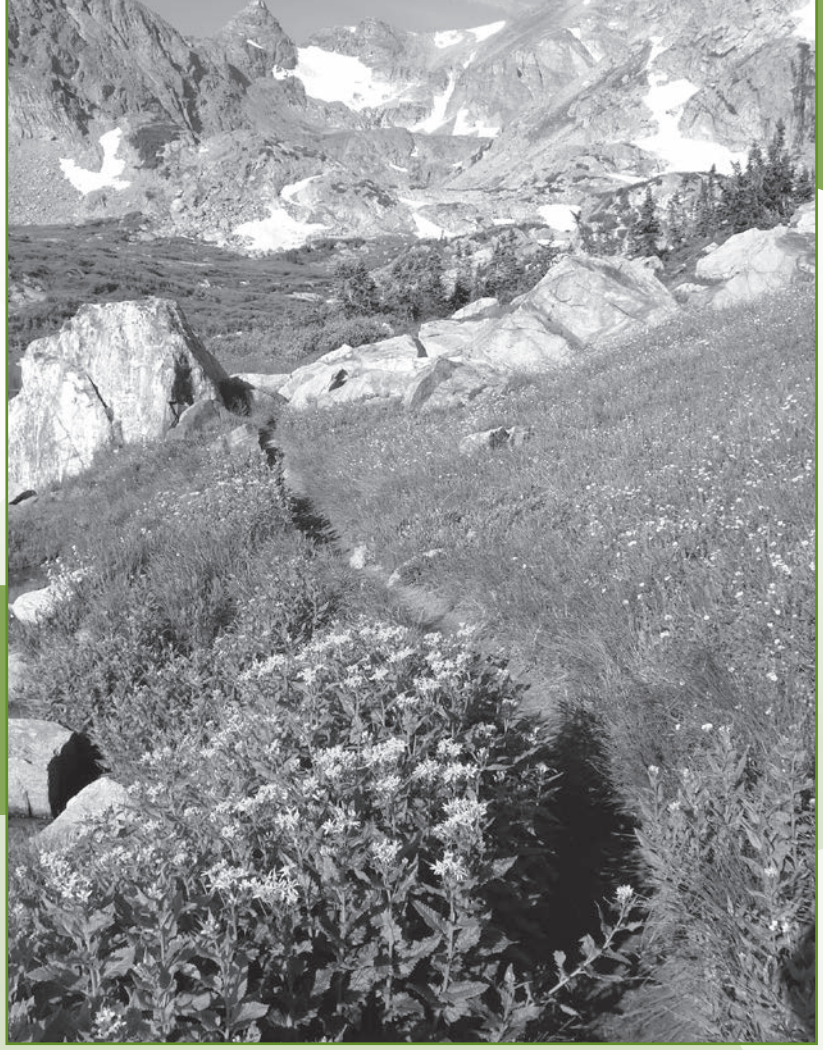


Figure 5a. The Pawnee Pass trail to Isabelle glacier in Indian Peaks Wilderness.
Photo by Elaine Wells.

Figure 5b. The Arapaho pass in Indian Peaks Wilderness. See if you can find the yellow-bellied marmot in the photo.
Photo by Elaine Wells.

Figure 6. Uncompahgre Wilderness has a beautiful and rugged landscape.
Photo by Andrew Maher.

same way. These meetings also gave the scientists the opportunity to discuss common themes and ideas they were finding in the trip reports.

The scientists noted that the trip reports had similar formats. A title, location, activity date, and other details about the wilderness area, such as miles traveled and elevation gains, were included. Introductory statements about the trip, photos about important parts of the experience, and a reflection at the end of the trip report were other common features. The trip reports also contained an area in which others who read the trip report may leave comments for the author.

The scientists decided to use one trip report as a case study because they did not have enough space to provide all the information from the 322 trip reports they analyzed. The scientists also thought that this case study **exemplified** a lot of the common themes found in the other trip reports they examined.

The case study trip report that the scientist chose was from a 16-year-old boy from Salt Lake City, Utah (figure 7). He posted a trip report about his 3.5-day experience in the Uncompahgre Wilderness in August 2010. The boy used the screen name "Eamigo13" when writing his trip report. Therefore, to make the discussion simpler, the scientists used the name Amigo when discussing the boy.

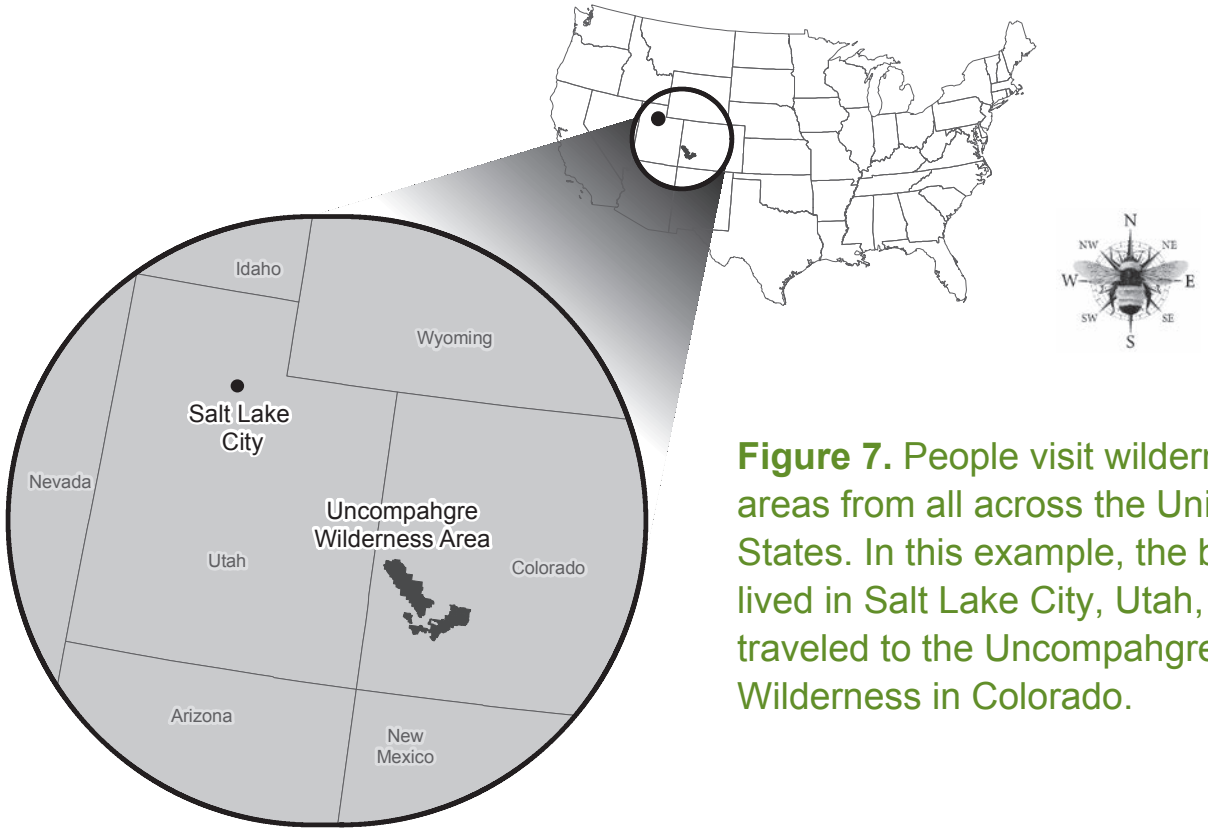


Figure 7. People visit wilderness areas from all across the United States. In this example, the boy lived in Salt Lake City, Utah, and traveled to the Uncompahgre Wilderness in Colorado.

Reflection Section

Do you think using a case study of one trip report is a good way to describe the scientists' findings? Why or why not?

The scientists met 12 times together when they were examining the trip reports. Why do you think these meetings were an important part of the research process?

Findings

The scientists found that Web-based trip reports are an increasingly common way for people to share their wilderness experiences. The scientists also found that Amigo's experiences that he shared in his trip report provided a lot of information about individual and group experiences in the wilderness. For example, Amigo provided a background on how Uncompahgre Wilderness was chosen as their destination. Amigo wrote that he had seen photos of Uncompahgre Wilderness on a Web site. A couple of the photos of the Southern San Juan Mountain chain, particularly Uncompahgre and Wetterhorn peaks, **intrigued** him and made him want to visit the Uncompahgre Wilderness (figure 8a and 8b).

Figure 8a.
Uncompahgre peak has an elevation of 14,309 feet. It is the sixth tallest peak in Colorado.
Photo by Ken Straley, Forest Service.

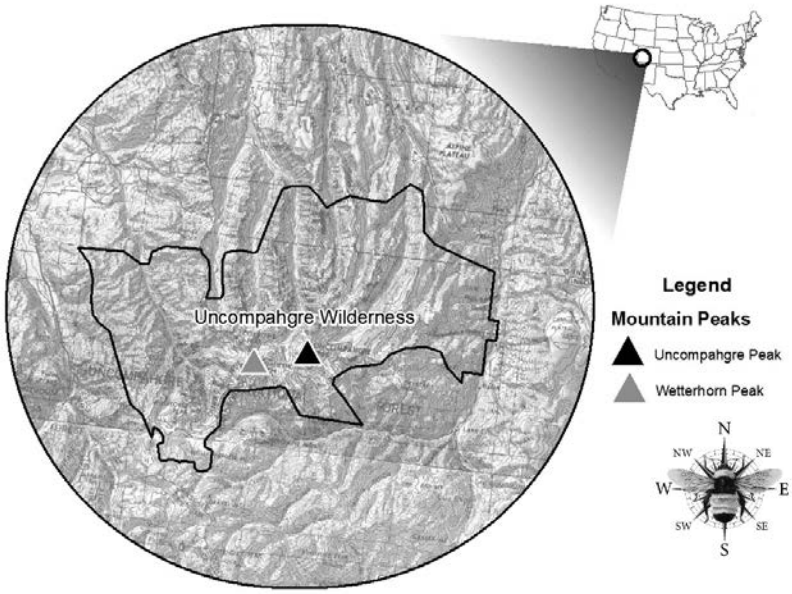


Figure 8b. Uncompahgre peak and Wetterhorn peak are both "14ers." Fourteeners are mountain peaks with elevations of more than 14,000 feet. Wetterhorn peak has an elevation of 14,015 feet. Colorado has 58 14ers, the most of any State in the United States. Uncompahgre peak and Wetterhorn peak are in the Southern San Juan Mountains.

When Amigo's dad asked Amigo to help plan a vacation for them, Amigo told his dad about Uncompahgre and showed him the photos. Amigo's dad agreed to the backpacking trip. They began to plan their trip. Amigo's younger brother and another father-son duo planned to go with Amigo and his dad.

Amigo also provided information on the hiking routes they took and photos of different parts of the trip. Amigo described how he felt a deep connection to wilderness. The scientists found that Amigo wanted to do more than just look at photos of wilderness, Amigo wanted to experience it. In an entry written on August 11, 2010, Amigo wrote—

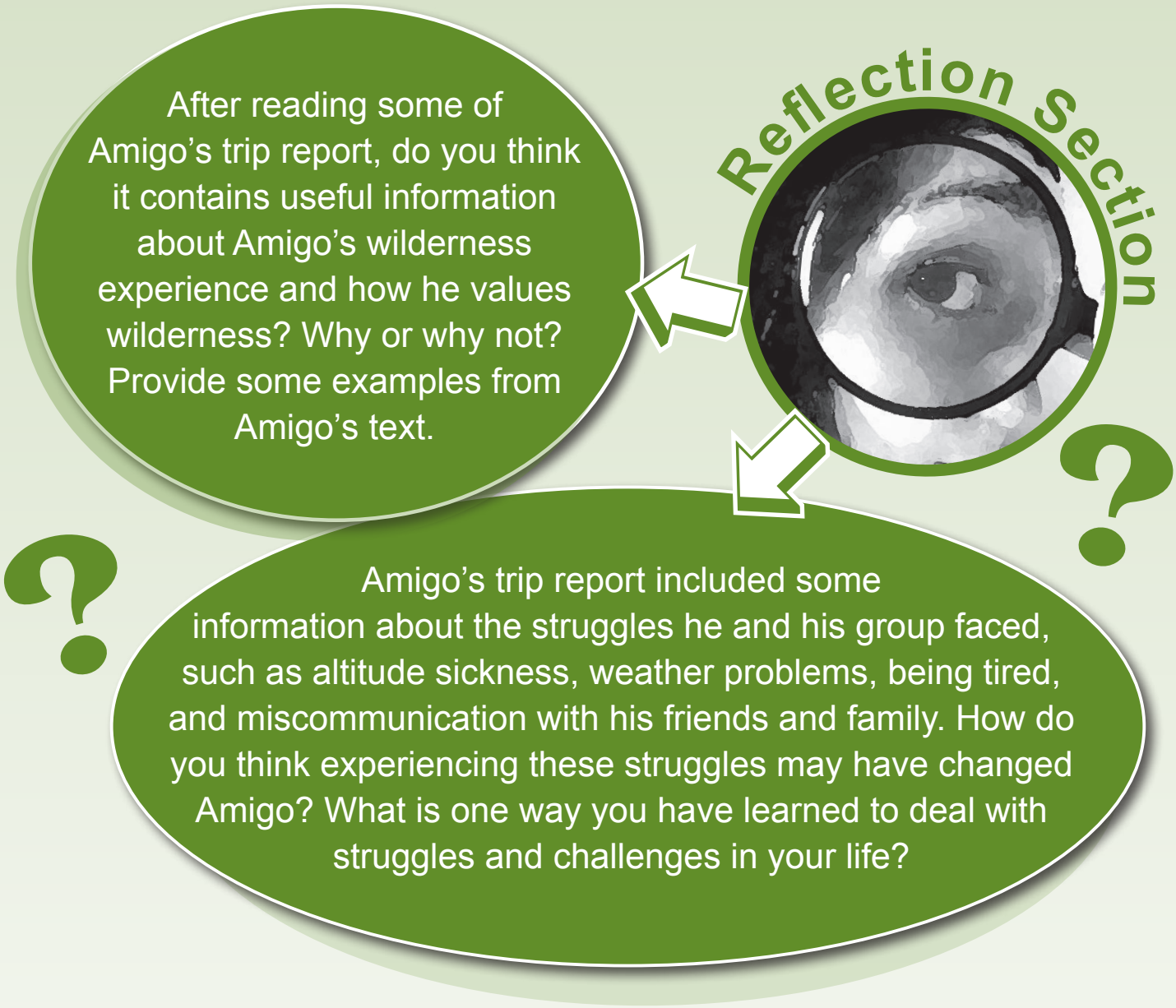
> "I am currently sitting with my back leaning against a log with Wetterhorn soaring right above me and Coxcomb looming to my left. I am finally in the Uncompahgre Wilderness on a trip that started at least a year ago when I came across some stunning pictures on summitpost.org. It is not a pristine forested area, but a rugged mountain range with rolling alpine tundra. It is AWESOME!"

Amigo also recounted details such as waking up early in the morning, hiking the trail, losing the trail, **altitude sickness**, weather problems, and being tired. He also gave accounts of struggles they faced. For example, Amigo wrote—

> "I can't go to sleep so I might as well write some more. I'll write a little compare/contrast of today and yesterday. Physically today was a lot harder. We did a lot more climbing, a

lot more mileage, but for the most part we had higher spirits. Yesterday, Brian was grumpily trudging along behind us, complaining about altitude sickness, while today he was practically running for parts of the hike. I think DJ and Michael were better prepared mentally for what lay ahead today allowing them to go farther and faster. Personally, I felt a lot happier today, Yesterday night I felt really bad after trying too hard to persuade everyone to do Redcliff and by the end felt like I forced them to agree and felt bad for dragging them along on the trip. Today I approached things differently. I was more open to others' ideas and less stubborn about doing things my way. My attitude made all the difference.

Amigo's trip report detailed a lot of information about Amigo's experience with wilderness. The trip report provided Amigo with a way of relating his experience to others and making meaning for himself about his experience. In the example above, Amigo reflected on his interactions with the group. He was figuring out why people reacted the way they did and how his reaction and attitude could make a difference in the outcome of the situation. This type of reflection helped Amigo make meaning of his wilderness experience as well as his experience with others.



Discussion

The scientists found that the Web-based trip reports are an increasingly common form of talking about wilderness experiences. The Web-based trip reports provided a lot of insight into individuals' wilderness experiences and how they value wilderness. The trip reports also provided the scientists with insight into how people use the World Wide Web to discuss their experiences, share those experiences with others, and make meaning for themselves about their experiences.

Amigo's trip report is just one of hundreds of trip reports in which people share what they experienced in a wilderness area

and what it meant to them. The Web-based trip reports also enable individuals to communicate with others about their experiences and receive feedback. The trip reports have a section in which others reading the trip report can leave comments for the author. This form of relating wilderness experiences and discussing them is valuable for the person writing the blogs and also for the people reading the blogs. The scientists discovered that by reading the blogs themselves, they could learn a great deal about how people experience and value wilderness.

Reflection Section

Why do you think it might be useful for scientists to use trip reports published online to learn information about how people value wilderness?

What is one disadvantage of using trip reports published on the Internet to learn about how people value wilderness?

Adapted from Champ, J.G., Williams, D.R., and Lundy, C.M. 2013. An on-line narrative of Colorado Wilderness: self-in-"Cybernetic Space." Environmental Communications (7, 1): 131–145. (1 November 2013).

Glossary

aesthetic (es **thet** ik): Of or relating to beauty or what is beautiful.

altitude sickness (**al** tə t(y)üd **sik** nəs): The effects (as headache, nausea, or swelling of the brain) of oxygen deficiency in the blood and tissues developed at high altitudes having reduced atmospheric pressure.

analyze (**a** nə **līz**): Separating something into its parts in order to examine them.

ecosystem services (**ē** kō **sis** təm **sər** vəs is): Environmental health benefits provided by a community of plant and animal species.

encompass (in **kəm** pəs): To include.

exemplify (ig **zem** plə fī): To serve as an example of.

habitation (ha **bə** tā **shən**): The act of living in a place.

intrigue (in **trēg**): To arouse the interest or curiosity of.

manipulation (mə **ni** pyə **lā** shən): An action that moves or controls something by hand or by using a machine.

mass media (**mas mēd ē** ə): A means of communication, such as newspapers, magazines, and online communication, that reaches a wide variety of people.

primeval (prī **mē** vəl): Very old or ancient.

primitive (**pri** mə tiv): Original. Natural areas with no development.

remote (ri **mōt**): Far away or secluded.

rugged (**rəg** əd): Having a rough, uneven surface.

solitude (**sä** lə tüd): The quality or state of being alone or remote from society.

untrammeled (un **tra** məl[d]): Unrestrained; free.

Accented syllables are in **bold.**
Marks and definitions are from http://www.merriam-webster.com.

If you are a Project Learning Tree-trained educator, you may also use the following activities as an added resource: "400-Acre Wood;" "Loving It Too Much."

Common Core FACTivity

In this FACTivity, you will answer the question, "Does writing and reflecting on an experience help you to learn or understand something better?"

Methods

In this article, you learned about a teenager who shared his experiences through writing.

Take a moment to think about a recent experience you had. Some examples might include going to a birthday party, visiting a friend's house, traveling with your family, exploring outside, or participating in an activity at school.

Pretend you are writing a blog. Write a paragraph or two about your experience. Draw a picture of your experience if you would like or, if you have some photos, include them with your paragraphs.

After writing about your experience, think about what writing about the experience helped you do. These questions will get you started:

1. Did writing about your experience help you learn something new about the experience? If so, what new thing did you learn?
2. How did writing about the experience make you feel?
3. Do you think what you wrote might help others? If so, how might it help them? If not, why not?
4. Do you think writing about your experiences where others could respond to you would help you learn new things? Why or why not?
5. How do you think writing about science experiments helps scientists?

Share what you found with your class or in small groups.

FACTivity Extension:

As an individual or as an entire class, you may write and submit a blog entry about a science experience, experiment, or outdoor activity where you learned something new or different. Make sure that the blog entry is properly punctuated and grammatically correct and that the spelling has been checked. Submit your blog entries to Jessica at jessica@naturalinquirer.org. Blog entries will be posted on the *Natural Inquirer* Web site (http://www.naturalinquirer.org).

Web Resources

Grand Mesa, Uncompahgre, and Gunnison National Forests
http://www.fs.usda.gov/gmug

Arapaho and Roosevelt National Forests: Indian Peaks Wilderness
http://www.fs.usda.gov/detail/arp/specialplaces/?cid=fsm91_058237

White River National Forest: Flat Top Wilderness and Holy Cross Wilderness
http://www.fs.usda.gov/attmain/whiteriver/specialplaces

Ashley National Forest- High Uintas Wilderness
http://www.fs.usda.gov/ashley/

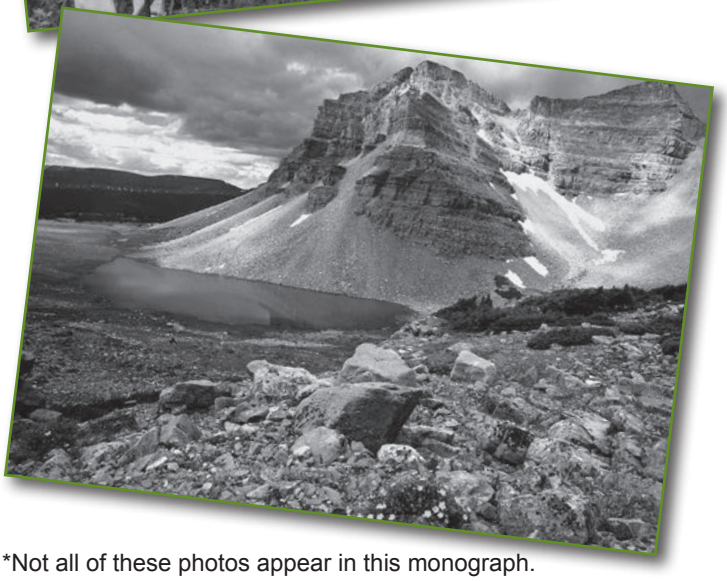
Uinta-Wasatch-Cache National Forest- High Uintas Wilderness
http://www.fs.usda.gov/main/uwcnf/home

Wilderness Information
http://www.wilderness.net

Common Core Connection

Wilderness 2.0
Photo Challenge

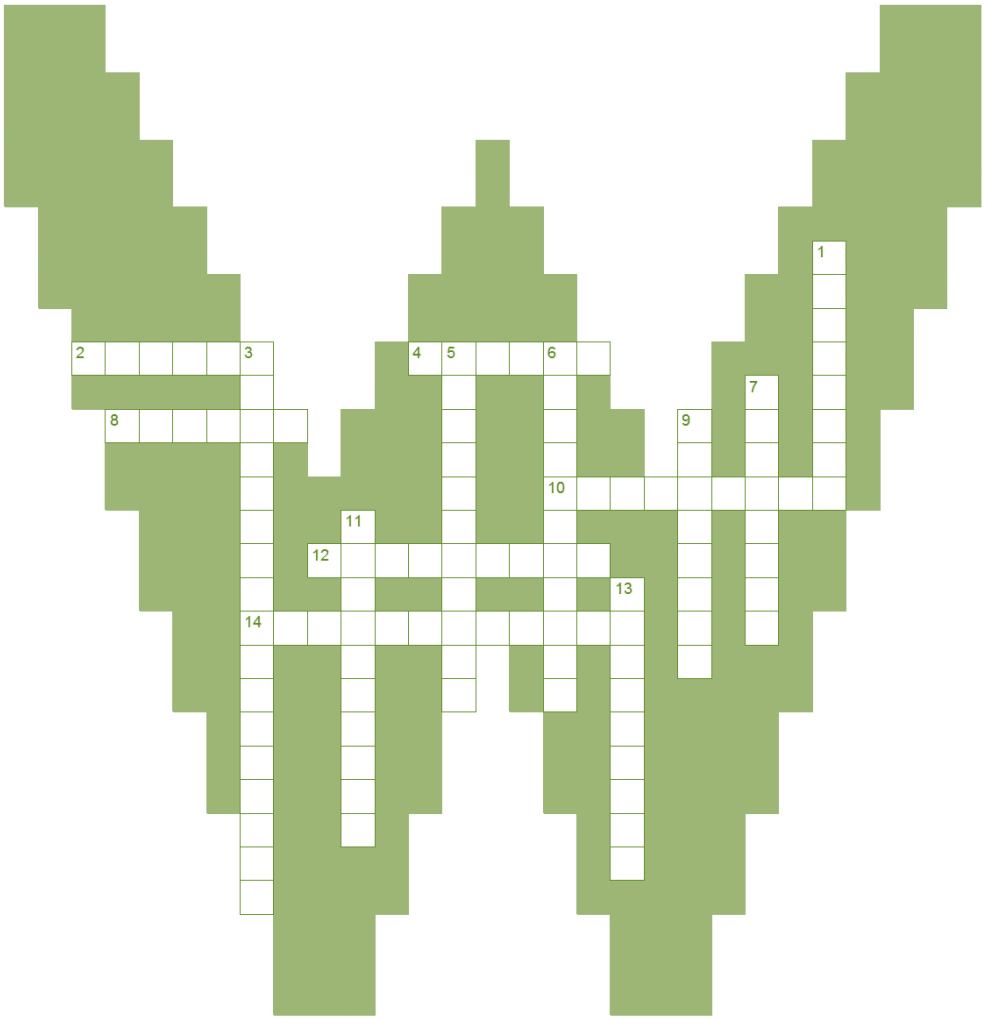
Explain what each of these photos* means in relation to the Wilderness 2.0 article. You may write your explanation or hold a class discussion. If you write your explanation, use complete sentences with proper grammar, spelling, and punctuation.



*Not all of these photos appear in this monograph.

Wilderness 2.0

Crossword Puzzle



Across

2. Far away or secluded.
4. Having a rough, uneven surface.
8. Last name of author who wrote the book, Silent Spring.
10. Original. Natural areas with no development.
12. A means of communication, such as newspapers, magazines, and other online communication, that reaches a wide variety of people.
14. An action that moves or controls something by hand or by using a machine.

Down

1. To arouse the interest or curiosity of.
3. Environmental health benefits provided by a community of plant and animal species.
5. Unrestrained; free.
6. To serve as an example of.
7. The quality or state of being alone or remote from society.
9. Very old or ancient.
11. The act of living in a place.
13. To include.

Which National Education Standards Can Be Addressed Using This Monograph?

National Science Education Standards Addressed in This Article

National Science Education Standard	Where and How the Standard Is Addressed
Abilities Necessary To Do Scientific Inquiry	Who Are Scientists? Describes the characteristics of scientists; Thinking About Science: Explains what it means to be a social scientist; Methods: Collecting and analyzing data.
Understandings About Scientific Inquiry	The whole monograph: Exposes students to social science and methods of gathering and analyzing data
Regulation and Behavior	Findings: Shows the behavior and response of the boy to his environment and people.
Populations and Ecosystems	Entire article: One way humans adapt to a loss.
Personal Health	The whole monograph: Looks at personal health, both physically and mentally. Addresses physical health by discussing backpacking and the challenges and benefits. Addresses mental health through Amigo's personal narrative reflections in the Findings.
Science and Technology in Society	Introduction: Explains how to use trip reports (blogs) to evaluate how people value wilderness; Discussion: Addresses the value of trip reports and the information they provide.
Science as a Human Endeavor	Who Are Scientists? Describes characteristics of scientists; Meet the Scientists: Puts a human face on science; What Kind of Scientist Did This Research? Defines social scientist; Thinking About Science: Describes some goals of science.
Nature of Science	Thinking About Science: Describes some goals of science
History of Science	Welcome to the Wilderness 50 Monographs! and the Wilderness Time Line: Shows how the whole concept of wilderness developed over time.

Social Studies Education Standards Addressed in This Article

National Curriculum Standards for Social Studies	Where and How the Standard Is Addressed
Culture	Welcome to the Wilderness 50 Monographs! and the Wilderness Time Line: Show how the whole concept of wilderness developed over time and how wilderness is part of our culture.
Time, Continuity, and Change	Welcome to the Wilderness 50 Monographs! and the Wilderness Time Line: Show how the whole concept of wilderness developed over time.
People, Places, and Environments	Introduction, Methods, Findings, and Discussion: Show how people value wilderness and the experiences they have in these areas; Findings and Discussion: Show how Amigo's identity is shaped by his experience in wilderness.
Power, Authority, and Governance	Welcome to the Wilderness 50 Monographs! and the Wilderness Time Line: Show how the whole concept of wilderness developed over time and how wilderness is part of our culture; Thinking About the Environment: Shows how the government develops and protects wilderness areas.
Production, Distribution, and Consumption	The whole monograph: Tries to determine how people value wilderness.
Science, Technology, and Society	Introduction: Shows the use of trip reports (blogs) to evaluate how people value wilderness; Discussion: Shows the value of trip reports and the information they provide.

Common Core Standards for Science Addressed in This Article

Common Core Standard	Where the Standard Is Addressed
Scientific and Engineering Practices	
Asking Questions (for science) and Defining Problems (for engineering)	Who Are Scientists? Describes how asking questions is a characteristic of scientists; Thinking About Science: Explains how the goal of science is to discover new information; Introduction: Presents the research questions in this study.
Planning and Carrying Out Investigations	The entire monograph: Focuses on planning and carrying out an investigation.
Analyzing and Interpreting Data	Methods and Findings: Describe what the scientists did; Methods and Findings Reflection Sections: Describe analyzing findings and information.
Using Mathematics and Computational Thinking	Thinking About the Environment: Discusses relative size and numbers; Number Crunch: Shows how to calculating size in comparison with something else.
Constructing Explanations (for science) and Designing Solutions (for engineering)	Introduction, Methods, and Findings Reflection Sections: Explain the findings; FACTivity: Explains how writing and reflecting about an experience influence how you think about the experience.
Obtaining, Evaluating, and Communicating Information	Methods: Describes how to obtaining and analyze information; FACTivity: Shows evaluating and communicating information.
Crosscutting Concepts	
Patterns	Methods: Shows how the scientists used a case study to discuss the 322 trip reports because there were common themes (patterns) throughout the trip reports and how the case study they chose exemplified those common themes.
Scale, Proportion, and Quantity	Thinking About the Environment: Discusses relative size and numbers.
Stability and Change	Welcome to the Wilderness 50 Monographs! and Thinking About the Environment: Address the character of wilderness and the prohibition of human modification.
Core Idea LS2: Ecosystems: Interactions, Energy, and Dynamics	
LS2.C: Ecosystem Dynamics, Functioning, and Resilience	Welcome to the Wilderness 50 Monographs! and Thinking About the Environment: Address the character of wilderness and the prohibition of human modification
Core Idea ESS3: Earth and Human Activity	
ESS3.A: Natural Resources	The entire monograph: Shows concern with natural resources.
ESS3.C: Human Impacts on Earth Systems	Welcome to the Wilderness 50 Monographs! and Thinking About the Environment: Address the character of wilderness and the prohibition of human modification

Nature-Oriented Parenting®

A guide for caregivers to teach children about the natural world

A Companion to the *Natural Inquirer*

...Be natural

The **"WILDERNESS 2.0"** monograph is all about a teen's experience in the wilderness and how that experience influenced him. In a similar way below, a father and son duo has been exploring the great outdoors together since the son was a baby. Both father and son reflect on their experience in wilderness areas and how that experience has affected them.

Reflecting on Wilderness

From Dave (father):

My son David and I have been exploring the outdoors together since before he could walk. I'd carry him around the yard and let him look at the leaves on the trees shimmering in the sunlight or at the spider webs covered in the morning dew. It was a learning experience for both of us— him seeing things for the first time and me seeing them through a child's eyes as if for the first time.

As he grew, we wandered farther afield, walking down to see the neighbor's horses. He was always thrilled when one was grazing close to the road. (Of course, we didn't try to feed them or touch them.) As he got a bit older, we started exploring nearby parks and nature preserves. I'd do my best to put my fears aside as I watched him inch across a stream balanced on a log, gaining confidence with every step. Now, we occasionally leave the modern world behind for a few days at a time, exploring the mountains of Appalachia or the Atlantic barrier islands. Everything we need, we carry with us. If we forgot to pack it, we do without. If the weather turns unpleasant, we deal with it as best we can. If it's going to get done, whether it's fetching water or cooking dinner or hanging the food from a tree to keep it safe from raccoons while we sleep, one of us has to do it.

Sometimes I teach my son some important lessons, like how to light the stove safely. Sometimes he teaches me some important lessons, like just how much he can do for himself now that he's 14 years old. Sometimes we spend long hours talking about all of those things we never take the time to talk about back home. Sometimes we hike in silence, each with our own thoughts. Sometimes we're rewarded with the feeling of elation as we realize we've made it to our campsite. Sometimes we're rewarded with the sight of wild horses grazing a few feet away. Always, we come home with a fresh perspective on things.

And from David (14-year-old son):

I have gone backpacking in wilderness twice with my dad, and both times it was a fun and awesome experience. I have seen many things that it is impossible to see in the concrete world of civilization, like 90-foot-high waterfalls in the Appalachian Mountains and wild horses just roaming freely on a wooded island in southeastern Georgia. Not only are there many things out there it is impossible to see without going deep into the backcountry, but backpacking and camping can provide a rewarding experience in that you can realize how strong you really are. It is also rewarding to see how it is possible to still go on living without television, computers, iPhones, and other modern technologies. Finally, the reward is in the nature around you while on the trip. Whether it is a bald eagle flying right above your head or a deer you see down the trail, nature never ceases to amaze any human who ventures into the backcountry.

The *Nature-Oriented Parenting* newsletter is designed for you to cut it out of the journal and take it home to share with your parents or other caregivers.

Did You Know?

The Appalachian National Scenic Trail passes through 25 different wilderness areas. The Continental Divide Trail passes through 26 different wilderness areas, including the Gila, which was the first wilderness area. The Gila Wilderness was established in 1924. For more interesting facts about wilderness areas, visit http://www.wilderness.net.

Wildlife Spotlight: Wildlife in Wilderness Areas

Wilderness is valuable for many reasons. One reason wilderness areas are valuable is that they help protect wildlife. Many birds use wilderness areas as places to rest during migration, grounds for wintering, and areas for nesting. For example, the Gulf Island Wilderness in Mississippi provides a critical stopover site for migratory birds like the ruby-throated hummingbird and yellow-billed cuckoo. Many other animals need wilderness areas, too. For example, wolverines, moose, bear, and elk all need large, undisturbed areas to make their homes. Wilderness areas provide this type of space. For more information about wildlife in wilderness areas, visit http://www.wilderness.net/NWPS/valuesEcological.

Family Outdoor Activity: Make Your Own Miniwilderness!

In this activity, you and your family will create an undisturbed area in your yard that you can observe over the course of a year or even longer. Depending on the space you have available, you may make this area as small or as large as you would like. The important thing is that the area you choose must not be disturbed, so you will want to mark off this area so that everyone will know where it is. If you have a small area, you could use a hula hoop to mark the area you will observe. If you have a larger area, you could use stakes and a rope to designate the area, or you could tie a rope into a circle and place it on the ground to identify the area you will observe.

After you have decided where your miniwilderness will be and you have marked off the area, your next job is to observe it periodically throughout the year and note all the family's observations in a journal. The date and time should be recorded for each journal entry. You may want to have a section for each family member in the journal or you may just choose to all write your observations under the date listed and put initials by the observation. For example, what colors and shapes do you see, and how do the colors and shapes change throughout the seasons? What evidence of animals do you see? How does this evidence change over the seasons? What do you hear and smell? Do you see soil, rocks, or plants? What is the air temperature? What is the weather like during your observations? Is it raining or has it recently rained?

As you and your family observe the area, you should not disturb it. For example, you should observe it from the edges and not climb across the area to observe it. Nothing should be added or removed from the area. You may want to bring a magnifying glass to help with your observations. You may also want to take pictures of the area you observe so that you can keep track of what it looks like over time. If you don't have access to a camera, you could also make a drawing of the area each time you make an observation. Take time to discuss with each other what you notice about the area and how it is changing over time.

This idea was derived from a book, *The Forest Unseen*, by David George Haskell.

Cradle of Forestry In America Interpretive Association
49 Pisgah Highway Suite 4, Pisgah Forest, NC 28768
http://www.cfaia.org
Main Office: 828-884-5713
http://www.naturalinquirer.org
http://www.scienceinvestigator.org

What Is the Forest Service?

The Forest Service is part of the United States Department of Agriculture (USDA). It is made up of thousands of people who care for the Nation's forest land. The USDA Forest Service manages more than 150 national forests and nearly 20 national grasslands. These lands are large areas of trees, streams, and grasslands. National forests are similar in some ways to national parks. Both are public lands, meaning that they are owned by the public and managed for public use and benefit. Both national forests and national parks provide clean water, homes for the animals that live in the wild, and places for people to do fun things in the outdoors. National forests also provide resources for people to use, such as trees for lumber, minerals, and plants used for medicines. Some people in the Forest Service are scientists whose work is presented in this monograph. Forest Service scientists work to solve problems and provide new information about natural resources so that the Forest Service can make sure our natural environment is healthy, now and into the future. **For more information, visit http://www.fs.fed.us.**

What Is the Southern Research Station?

The Southern Research Station's mission is to create the science and technology needed to sustain and enhance southern forest ecosystems and the benefits they provide. The station is part of USDA Forest Service Research and Development. Headquartered in Asheville, NC, the station serves 13 Southern States and beyond. Since the beginning of the 20th century, the Southern Research Station's 130 researchers have excelled in studies on temperate and tropical forests, forest resources, and forest products. These studies provide a wealth of long-term information on the dynamics of tree plantations and natural stands, watersheds, and wildlife habitats **For more information, visit http://www.srs.fs.usda.gov.**

What Is the Rocky Mountain Research Station?

The Rocky Mountain Research Station is one of five Forest Service Research and Development stations. It maintains 12 research laboratories within its 12-State territory, encompassing the Great Basin, the Southwest, the Rocky Mountains, and parts of the Great Plains. The station employs close to 400 permanent, full-time employees, including nearly 100 research scientists.

The station works to provide options on the sustainable use and appreciation of forests and rangelands by producing high quality science, high quality service, and high quality relationships with stakeholders around the Greater Rocky Mountain region. **For more information, visit http://www.fs.fed.us/rmrs/.**

What Is the Cradle of Forestry in America Interpretive Association?

The Cradle of Forestry in America Interpretive Association is a 501(c)3 nonprofit organization based in Pisgah Forest, NC. The Cradle of Forestry in America Interpretive Association strives to help people better understand ecology through recreation and education opportunities. Their projects include:

- Campground and recreation area management.
- Educational programs and services, including *Natural Inquirer, Investi-gator, Natural IQ, Natural Inquirer Reader Series, Nature-Oriented Parenting*, and scientist cards (http://www.naturalinquirer.org).
- Sales of forest-related gifts and educational materials.
- Workshops, newsletters, and publications.
- Partnership with the USDA Forest Service to provide programming at the Cradle of Forestry Historic Site.

For more information, visit http://www.cfaia.org.

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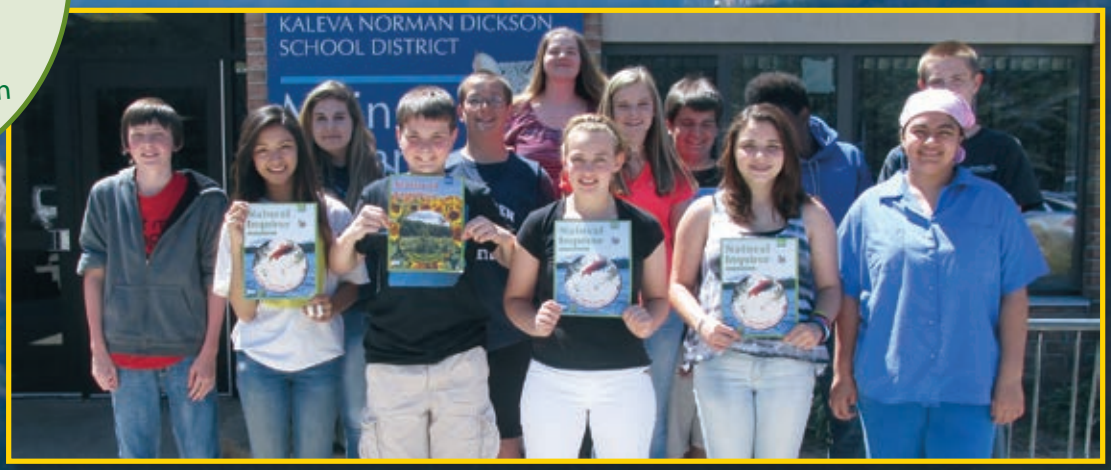

Visit these Web sites for more information:

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http://www.scienceinvestigator.org

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