



## CONSERVATION EDUCATION PROGRAM *Learning on the Land*

August 2010

[www.sjma.org](http://www.sjma.org)

San Juan Mountains Association—For Lands' Sake!

## Welcome to our e-Newsletter!

We hope you enjoy SJMA's newsletter created solely for educators - whether you teach in the classroom or outdoors, this newsletter is for you! In each monthly issue, you will receive helpful information on natural and cultural resources found in the Four Corners area, as well as field and classroom activities to do with your students.

The San Juan Mountains Association is the educational nonprofit partner for San Juan National Forest and Bureau of Land Management. If you received this newsletter and do not wish to continue receiving it, send an "unsubscribe teacher newsletter" email to [gabi@sjma.org](mailto:gabi@sjma.org). If a friend or colleague sees this newsletter and is interested in receiving it, please have them send an email to [gabi@sjma.org](mailto:gabi@sjma.org).

## Friends of the Earth

### Famous Conservationists

The history of conservation in the United States doesn't really start until the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. Prior to this, our young country took advantage of the 'bounties' of the land, from trees to animals, assuming a never-ending supply. But, once animals such as the passenger pigeon starting showing a sharp decline in population, and less and less timber was available for use, some people started showing concern for our environment in a way they hadn't before. Here are just a few of the more well-known conservationists from this era, whose shoulders today's conservationists stand upon: Theodore Roosevelt, Gifford Pinchot, Aldo Leopold and Rachel Carson.

### Theodore Roosevelt

October 27, 1858 – January 6, 1919

Theodore Roosevelt was known as a conservationist as well as an avid hunter. He believed in the wise use of resources. Probably no single person contributed more to the conservation of American lands than Teddy Roosevelt. While he was president, the following lands were placed under public protection:

- 150 National Forests
- 51 Federal Bird Reserves
- 4 National Game Preserves
- 5 National Parks
- 18 National Monuments
- 24 Reclamation projects

When Roosevelt became president, there were 5 National Parks. During his tenure, he doubled that number to 10. Roosevelt designated Mesa Verde as a national park, and tried, although unsuccessfully, to make the Grand Canyon a national park as well. It did, however, become a national monument. It is estimated that while Roosevelt was president, over 200,000,000 acres of land were placed under federal protection.

In 1906, Roosevelt signed the Antiquities Act, which preserves archaeological sites on federal lands, requiring federal agencies to manage and preserve them for scientific, commemorative and cultural values.

*"There can be no greater issue than that of conservation in this country."*

- Theodore Roosevelt, Confession of Faith Speech, Progressive National Convention, Chicago, IL, August 6, 1912



## Gifford Pinchot

August 11, 1865 – October 4, 1946

Gifford Pinchot was raised in a wealthy family in Connecticut, who acquired their money from lumber and land speculation. This weighed upon his father's conscience, therefore he included conservation in their family's interests. He urged Gifford to become a forester, a job title that at that time didn't exist. In 1898 Gifford became the chief of the Division of Forestry, which later became the U.S. Forest Service. In 1900 he founded the Society of American Foresters, which gave credibility to forestry as a new science.

Gifford Pinchot was known for the following quote: *"Conservation is the foresighted utilization, preservation and/or renewal of forests, waters, lands and minerals, for the greatest good of the greatest number for the longest time."* The idea of "wise use" of natural resources was popularized during his time with the Forest Service. John Muir is another well known environmentalist of the day, although his ideas of nature were not about its use, but its preservation. John Muir founded the Sierra Club on this idea. Muir and Pinchot had many public debates on this issue.

Pinchot was chief of the Forest Service at the same time that Teddy Roosevelt was president. Our national forests grew exponentially. In 1905 there were 60 units of forest reserves covering 56 million acres; in 1910 it had increased to 150 national forests covering 172 million acres. Pinchot is generally regarded to be the "father" of conservation.

## Aldo Leopold

January 11, 1886 – April 21, 1948

Aldo Leopold, another famous conservationist, actually rejected the utilitarianism of Pinchot and Roosevelt. He studied at the Yale School of Forestry, which was endowed by Pinchot and his father. Leopold later became a professor at University of Wisconsin. He purchased 80 acres in the sand country of central Wisconsin that had been logged and overgrazed, and worked to restore it where he wrote his best known book, [A Sand County Almanac](#).

Leopold saw wildlife management as a tool for creating diversity rather than simply for hunting purposes, which was the more popular view of the day. Early on he was hired to kill top predators in New Mexico – bears, wolves and mountain lions, due to ranchers believing that they were killing their livestock. But over time his perspective on predators changed, and he grew to believe that they were an essential part of a working ecosystem. He was the nation's foremost expert on wildlife management by 1930s, and is now known as the founding father of wildlife management/ecology. It is from Aldo Leopold that we acquired the concept of a land ethic, which is an "*ethic dealing with man's relation to land & to the animals & plants which grow upon it*".



Leopold is also well known for the following quote about conservation from [A Sand County Almanac](#): "*A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.*"

## Rachel Carson

May 27, 1907 – April 14, 1964

Rachel Carson was a marine biologist and nature writer, best known for her book, [Silent Spring](#), published in 1962. She first wrote [The Sea Around Us](#) and [The Edge of the Sea](#), both of which were best sellers.



After WWII, the military started funding the creation of more pesticide. Then, in 1957, the USDA started a fire ant eradication program using pesticides, including DDT. These events prompted Carson to devote her research and next book to the study of pesticides. In 1959, she wrote a letter published in The Washington Post about the effects of pesticides on bird populations, saying they were creating a "silencing of birds" - which eventually contributed to the book title [Silent Spring](#). She wrote [Silent Spring](#) in 1962, which brought the knowledge of pesticides, their widespread use and the damage they do to ecosystems to the forefront of public knowledge. While [Silent Spring](#) was very controversial for its day, it had wide-reaching effects, eventually changing national pesticide policy, including banning DDT and other pesticides. The environmental movement created by publishing the book eventually led to the creation of the Environmental Protection Agency.

Many people, both then and now, criticized Carson and [Silent Spring](#). Chemical companies found scientists that refuted her findings, while others said she wasn't a biochemist, only a marine biologist, therefore didn't have the knowledge and background to make such conclusions. Others were, and still are, angry with her for contributing to the banning of DDT in the U.S., claiming that she is responsible for thousands of malarial deaths. In truth, she didn't espouse complete ban of pesticides, but a responsible and carefully managed use with an awareness of the chemicals' impact on the entire ecosystem

*"It is a wholesome and necessary thing for us to turn again to the earth and in the contemplation of her beauties to know of wonder and humility."* ~Rachel Carson

## Field and Classroom Activities

### Adding It Up - Biomagnification Activity

Rachel Carson brought pesticide use to the forefront of people's minds. DDT used to be used with abandon in the U.S. to control mosquito populations. One problem with DDT, however, is that it 'biomagnified' in animals. Biomagnification is the process by which pesticides and/or heavy metals move up the food chain. This affected some bird species negatively in that it made their eggshells so brittle that they simply broke when sat upon. This is believed to be true for such species as the brown pelican, bald eagle and the peregrine falcon.

Activity from the UNC School of Education at <http://www.learnnc.org/lp/pages/2963>

#### Materials

- strips of green colored paper to represent aquatic plants (any size, 4–5 per student)
- strips of orange colored paper to represent fish (2 per student)
- 3–5 strips of brown colored paper to represent eagles
- masking tape
- markers or crayons for each student

#### Activity

1. Post a key at the front of the room identifying what each color strip represents: green for aquatic plants, orange for fish, and brown for eagles.
2. Give each student four or five of the strips of paper representing aquatic plants. Using markers or crayons have the student place two colored dots on one strip, three dots on the next strip, four dots on the next strip and five dots on another strip. The optional fifth strip may be left plain or have one dot put on it. Explain that these dots represent chemicals that have been taken into the plants from pollution in the water.
3. Collect all of the strips then scatter them about the room. Do not let the students watch you do this.
4. Tell the students that they are going to be fish eating the plants, then give them about fifteen to twenty seconds to go out and collect as much food as they can.
5. When students have returned to their seats, have them count the number of dots their fish "ate" and put the total number of dots onto a new colored strip to represent their fish (this paper was given to the students in the beginning). Have them also make another fish with the same number of dots as the first. Set this second set of fish to the side for use in step seven.

6. Draw a number line on the bottom of the board and label numbers covering the range of dots the fish took in. Each student can then tape one of his/her fish above the appropriate number, making an effective pictograph or line plot of the results. Discuss what information can be obtained from the graph and determine the mean, mode, median, and range of the graphed data. Discuss what each of these terms means and how it might be important.
7. Take up the second fish from each student and scatter them about the room as was done with the “plants.”
8. Pick three to five students to now act out the part of eagles eating from your “river.” Give the students fifteen to twenty seconds to collect as many fish as they can.
9. Repeat step six using the brown colored strips to represent eagles.
10. Compare the amount of chemicals taken in by the fish with the amount of chemicals taken in by the eagles.

### Good Oak (from Leopold Education Project)

See more about the Leopold Education Project under “Extend the Experience”.

Read the essay “Good Oak” from [A Sand County Almanac](#). If your students are old enough to read it, have them do so also, or paraphrase it for them. Then go out and find a tree stump. Use the essay and the study of the stump to understand tree rings (a tree grows a new ring every year), and tree parts and processes.

### Conservation History

I have listed only a few of the conservation heroes from the past 100 years or so. There are many more interesting scientists, conservationists and environmentalists your students can learn about. Here are a few to research: Henry David Thoreau, John Muir, Edward Abbey, E.O. Wilson, Jane Goodall, David Brower, and Louis B. Marshall.

### Extend the Experience

**Read the writings** of or about some of these famous people.

- Aldo Leopold – [A Sand County Almanac](#)
- Teddy Roosevelt - [The Wilderness Warrior: Theodore Roosevelt and the Crusade for America](#) by Douglas Brinkley
- Rachel Carson – [Silent Spring](#)
- Gifford Pinchot – [The Fight for Conservation](#)

The **Leopold Education Project** is an environmental education program based on the writings of Aldo Leopold, especially those from [A Sand County Almanac](#). The mission of the Leopold Education Project is to create an ecologically literate citizenry so that each individual might develop a personal land ethic. The state coordinator for Colorado is Jerry Miller, Sterling, CO, (970) 580-5028 [jerrymiller@hotmail.com](mailto:jerrymiller@hotmail.com). He can be contacted to find out more about the project in Colorado, including setting up a workshop in your area. Visit [www.lep.org](http://www.lep.org) to find out more.

## Announcements

### SJMA Calendar:

August 28-29 - Backpacking with SJMA with MK, Contact [mk@sjma.org](mailto:mk@sjma.org) or 759-9113

September 17- Members' Series Presentation, San Juan Public Lands Center, 5:30pm-7:00pm. Contact Susan Bryson 385-1312

September 25- National Public Lands Day, Canyons of the Ancients National Monument. Location to be announced. Contact Kathe Hayes 385-1310

September 29 - Rock Walk, 5:30pm-7:30pm with Jason Hooten, Horse Gulch, Durango, Contact Gabi Morey 385-1256

**BLM History Mystery Series** - the latest installment in the Bureau of Land Management's (BLM) *History Mystery* series, "Mystery of the Pony Express," is now available, both as a full-color booklet in magazine format and online at [http://www.blm.gov/wo/st/en/res/Education\\_in\\_BLM/Learning\\_Landscapes/For\\_Kids/History\\_Mystery/hm5.html](http://www.blm.gov/wo/st/en/res/Education_in_BLM/Learning_Landscapes/For_Kids/History_Mystery/hm5.html).

**RiverWatch** is a statewide volunteer water quality-monitoring program operated by the non profit 501©3 Colorado Watershed Assembly in cooperation with the Colorado Division of Wildlife. Our mission is to work with voluntary stewards to monitor water quality and other indicators of watershed health, and utilize this high quality data to educate citizens and inform decision makers about the condition of Colorado's waters. It is hosting one more training this year:

- October 18-21, 2010 we will be meeting at Camp Cedaredge, in the town of Cedar-edge on the Western Slope. The deadline to register for this event is October 1th. Registration after this date will be \$110 per person.

If you are interested in attending this training or learning more about our program, please contact Michaela Taylor at [michaela@coloradowatershed.org](mailto:michaela@coloradowatershed.org) or at (303) 291-7322.

## Educators—Become a member of SJMA today & receive a 20% off coupon to our bookstore!

Whether you're a 'formal' K-12 school teacher or a non-formal educator, to receive your 20% off coupon valid at any of SJMA's bookstore locations, simply print this or a future newsletter and bring it and your new membership information in to one of our bookstores (Durango, Pagosa Springs, Bayfield or Dolores). San Juan Mountains Association has been around since 1988. For 20 years, SJMA has been establishing a legacy of caring for the land. Side by side with our members and volunteers, we are helping to ensure the survival of Southwest Colorado's natural glories for generations to come. SJMA also offers classroom visits, naturalist walks and talks, teacher for-credit workshops, and field trips to public lands. For more information, visit our website at [www.sjma.org](http://www.sjma.org), or call 970-385-1256. If you do not wish to continue receiving this newsletter, send an "unsubscribe teacher newsletter" email to [gabi@sjma.org](mailto:gabi@sjma.org). If a friend or colleague sees this newsletter and is interested in receiving it, please have them send an email to [gabi@sjma.org](mailto:gabi@sjma.org).

