

Basics of Conservation

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Katie Hefner, Intern

*“When we try to pick
anything out by itself,
we find it hitched to
everything else in the
Universe.”*

John Muir, 1911

Introductions

Dana Miller

- Education Coordinator for Haywood County Soil and Water Conservation District
- WCU and Vanderbilt alumnus
- Taught middle and high school environmental science prior to my current position
- Gaston County native
- Enjoy anything outdoors, live music, cooking and reading.



Katie Hefner

- Intern for Haywood County Soil and Water Conservation District
- Senior at WCU
- Major Environmental Science
- Minor in Chemistry and Biology
- Haywood County Native
- Love hiking, kayaking, Netflix, and Colorguard with Pride of the Mountains Marching Band



Contact us

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Purpose and Objectives

- Participants will be able to explain what natural resource conservation is and why it is important.
- Participants will be able to identify federal, state and local agencies that aid in natural resource conservation.
- Participants will be able to describe some the major legislation impacting conservation in America and its' effectiveness.
- Participants will be able to describe how individuals can take part in natural resource conservation.
- Participants will be able to describe some best management practices for conservation.

Ecosystem Connectivity

Take the survey found at [this link](#). When you finish, post one of the following in the chat box if you feel comfortable sharing:

- Something interesting that you learned
- Your score
- A question you would like answered today

What are natural resources?

Natural resources are materials that are made by the earth, that enhance human life and overall survival.

Examples of natural resources:

- Soil
- Air
- Water
- Wildlife
- Plants
- Rocks and minerals



Why are natural resources important?

There are an abundance of ways these resources are beneficial to the human race, but also to other resources; everything is connected.

- *Food, fiber, timber, medicine, metals and other raw materials*
- *Nutrient cycling*
- *Climate regulation*
- *Disease, pest and other population controls*
- *Water, air and soil purification*
- *Waste management*
- *Energy*
- *Recreation, spiritual, aesthetic*

Most of these resources are non-renewable and can become overused.

Renewable Resources vs. Nonrenewable Resources

Renewable resources can be replenished **within** a human lifetime.

Examples:

- Solar energy
- Timber
- Crops
- Wind energy
- Water

Nonrenewable resources take **longer** than a human lifetime to be replenished.

Examples:

- Natural gas
- Coal
- Oil
- Plastics
- Metals

What is conservation? Why is it important?

Merriam-Webster dictionary defines conservation as “planned management of a natural resource to prevent exploitation, destruction, or neglect”.

Conservation is the wise use of resources.

Through conservation, we can:

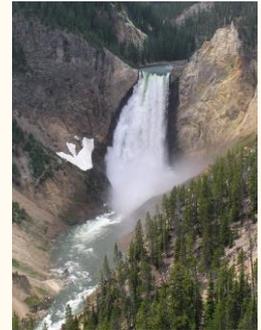
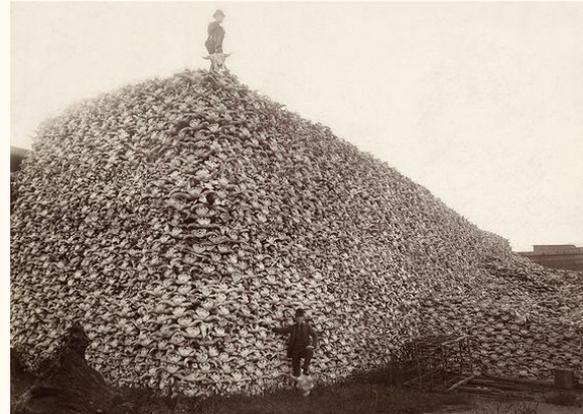
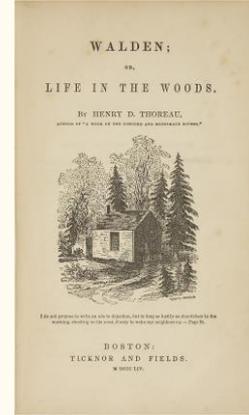
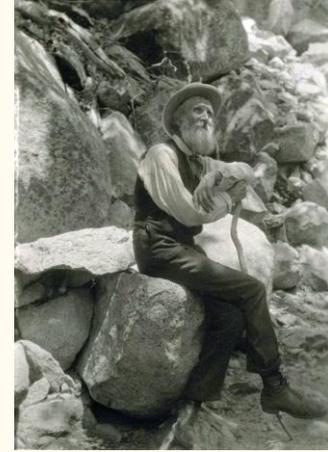
- *Protect wildlife and their habitats*
- *Protect soil, water, plant and air resources*
- *Learn how to form a sustainable culture*

Conservation in America



Late 1800's

- After a period of exploitation of resources (i.e. overhunting, deforestation, etc.), people became concerned about natural resources.
- Art and literature garnered concern for protecting these resources.
 - John Muir
 - Henry David Thoreau
 - Ansel Adams
- Conservation grew in popularity which eventually led to the establishment of the National Parks.
 - Yellowstone was the first National Park, signed into law by President Grant in 1872.

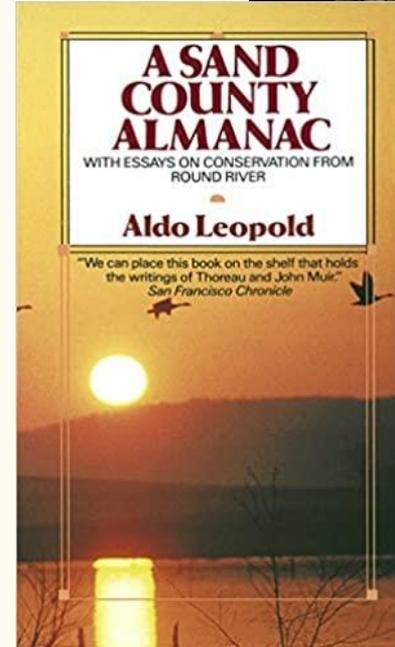
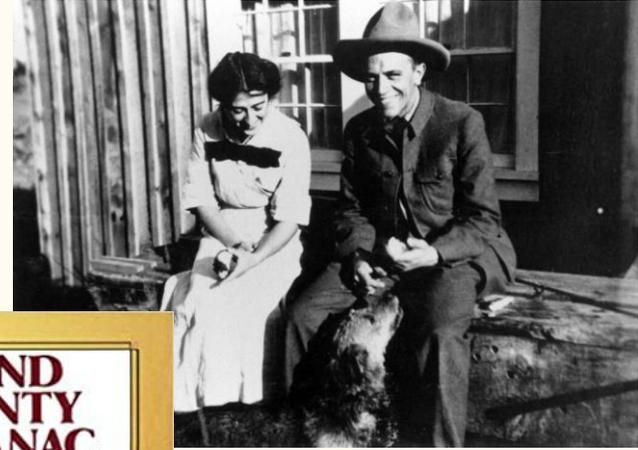


1949

- *A Sand County Almanac* by Aldo Leopold was published.
- Leopold introduced the idea of “land ethics” and the ethical responsibility humans have to care for natural resources.
- The book is a seminal piece of literature relating to conservation.

“Civilization has so cluttered this elemental man-earth relationship with gadgets and middlemen that awareness of it is growing dim. We fancy that industry supports us, forgetting what supports industry.”

Aldo Leopold, A Sand County Almanac

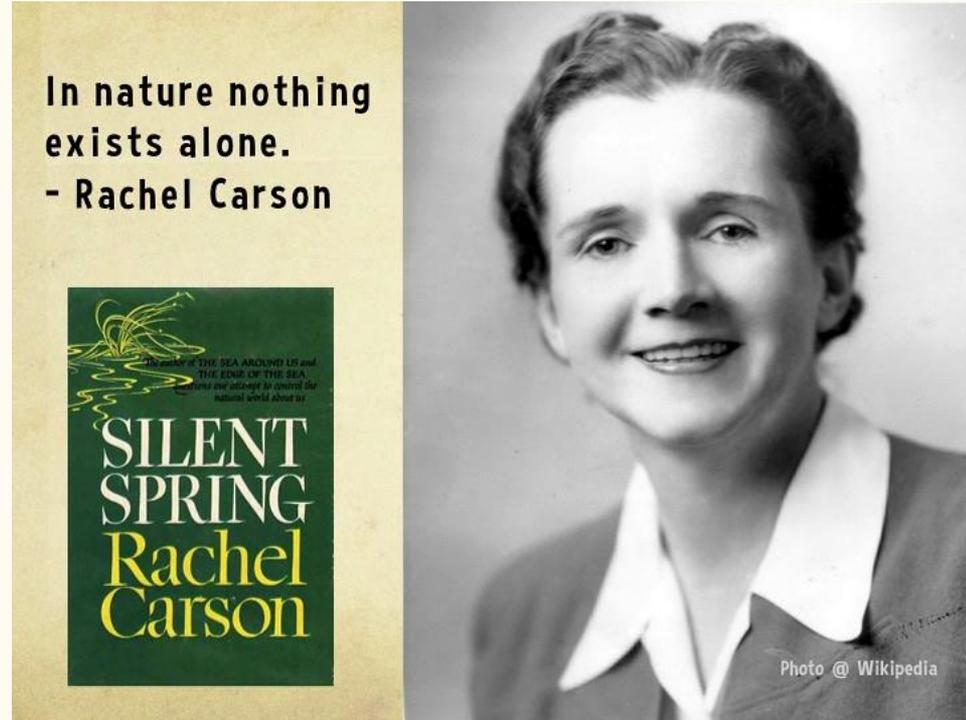


1962

- Rachel Carson published *Silent Spring*, which featured the topic of indiscriminate use of the pesticide DDT on the surrounding environment, and its' effects on the biota within it.
- Scientists knew this information, but Carson introduced it to the public.
- She studied her audience and picked examples that would alter their perspectives.

“By acquiescing in an act that causes such suffering to a living creature, who among us is not diminished as a human being?”

Rachel Carson



The Burning River

- The Cuyahoga River, located in Cleveland, Ohio, caught fire on June 22nd, 1969.
 - This event drew national attention to the quality of the water, which had been used to dump industrial waste in for decades.
- The river had previously caught fire at least 13 times.
- The water quality was so poor that oil buildup allowed for the fire to spread.
- The 1969 fire damaged 2 railroad bridges before it could be controlled.
- This event had a direct impact on the development of the Clean Water Act and the EPA.



1st Earth Day- 1970

- Earth Day, held on April 22, 1970, originated from demonstrators protesting over lack of environmental policies.
- This helped lead to the creation of the Environmental Protection Agency (EPA)
- Today, Earth Day is recognized as the largest secular observation in the world, with more than 1 billion people involved.



EPA is established- 1970

- The Environmental Protection Agency is established. This federal agency conducts research, monitors the condition of the environment, sets and enforces quality standards, and is responsible for overseeing environmental laws, such as the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act and the Endangered Species Act.



Describe what you think is happening
in this picture.

To respond:
[Click this link](#)

Text DANAMILLER507 to 37607

Go to PollEv.com/danamiller507



Soil Conservation

1930-1940

- The Dust Bowl in 1933 was fueled by poor land use practices and drought. It led to widespread land degradation.
- This event raised an alarm and led to the creation of the federal Soil Conservation Service and local Soil and Water Conservation Districts, both of which Hugh Hammond Bennett was an important advocate for.
- The Soil Conservation Service has become the present-day Natural Resources Conservation Service (NRCS).



Soil Conservation Service

The goal of the Soil Conservation Service was to control, prevent, and preserve soil, water, and related resources as well as to help with water quality, control floods, and maintain the health of rivers.

This is important because soil and water quality impacts:

- *Food production*
- *Agriculture animal care*
- *Crop growth*



Soil Erosion

- Soil erosion- is the transport of sediments by wind, water, ice or gravity
- Soil erodes naturally, but human actions can accelerate the process
- Soil takes a long time to form, so once it is transported, it will not be quickly replaced.
- Bare soil= vulnerable to erosion



What are best management practices?

BMPs are measures that landowners use to reduce pollution and runoff, manage waste, protect water, air and soil quality, and reduce operation costs.



Conservation Tillage and cover crops

- Using alternative methods to till farmland that reduces disruption to the soil
 - No-till
 - Ridge-till
 - Mulch-till
- Cover crops and crop residue
 - Leaving crop residue on the field to prevent erosion from water and wind
 - Planting crops that are beneficial to the soil and not intended for crop yield



Riparian Buffer

- Riparian Buffer - vegetation that has been planted along stream banks that help hold the banks intact to reduce sediment pollution and increase stability, as well as providing temperature control and habitat.



Livestock Watering Systems

- Livestock watering systems- These systems vary, but usually include fencing streams to keep livestock from crossing or standing in the stream. Watering tanks are then added to pastures for livestock to use.



Contour Farming and Terraces

- Contour Farming - Planting crops along the contour of the land rather than planting across in straight lines. This can help reduce erosion by up to 50%.
- Terraces - Shortening a long slope into a series of shorter, more level steps. This allows more rainwater to soak into the soil.



Windbreaks

- Windbreaks - Planting rows of trees and shrubs to control wind erosion. Windbreaks shield open fields and reduce soil erosion.



Agriculture Reuse Ponds

- Ag. Reuse Ponds - Reusing water, such as runoff from irrigation, by capturing and storing it before putting it back on the farmland.



Water Conservation



List a common water pollutant

To respond:
[Click this link](#)

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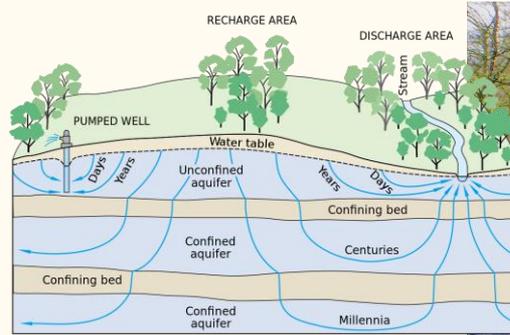
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Water Conservation

Managing water systems to:

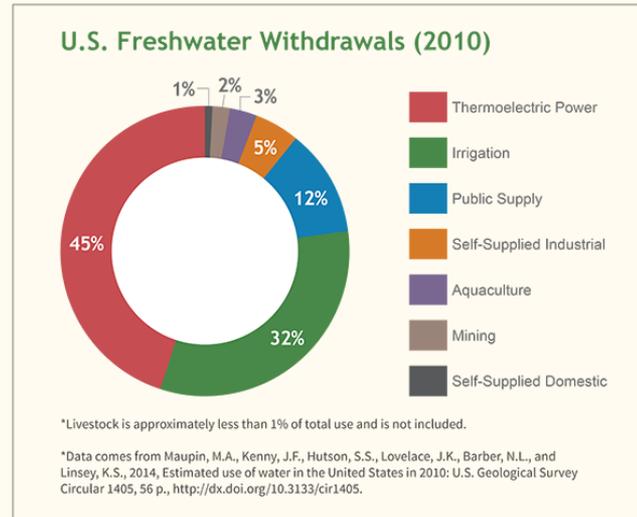
- *Reduce wasteful use of water resources*
- *Reduce water pollution*
- *Protect water quality*
- *Ensure adequate water resources for future generations*

This includes groundwater and surface water.

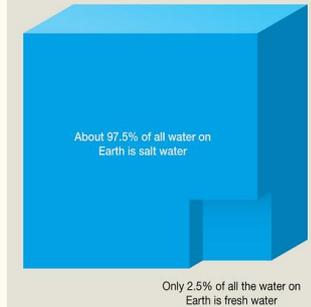


Water Use in America

- According to the [EPA](#), American families use an average of 300 gallons of water per day.
- 70% of that use is indoors (shower and toilet) and 30% is outdoors.
- Up to 180 gallons per week can be wasted by an American family.
- Ways to reduce waste:
 - WaterSense products
 - Fix leaks
 - Simple strategies like turning off faucet when brushing teeth



World fresh water supply



Around 70% of fresh water is frozen in Antarctica and Greenland icecaps



Most of the remaining fresh water lies too deep underground to be accessible or exists as soil moisture



Only 1% of the earth's fresh water is available for withdrawal and human use



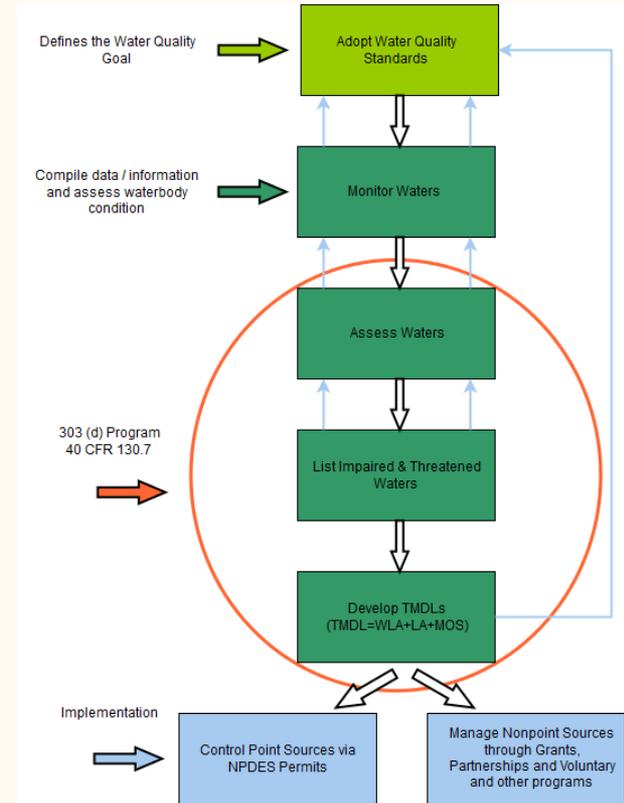
Sources: FAO, 2009.

Reducing water pollution



Clean Water Act

- This bill started as the Water Pollution Control Act in 1948 and was amended to the Clean Water Act in 1972.
- This bill mandates standards of surface water quality and wastewater, regulates the discharge of pollution, and identifies impaired waters.
- This act is most effective for point source pollution.



Safe Drinking Water Act

- SDWA was passed in 1974 and has been amended since then.
- This act sets national health-based standards for drinking water and its' sources (except private wells serving less than 25 people) to protect from natural and man-made pollutants.
- The act gives guidance on treating drinking water.
- Under this act, public water systems must provide Consumer Confidence Reports (CCRs) each year.

