

Lesson A1–5

Exploring Careers in Natural Resources

Unit A. Natural Resources

Problem Area I. Introduction to Natural Resources

Lesson 5. Exploring Careers in Natural Resources

New Mexico Content Standard:

Pathway Strand: Natural Resources and Environmental Systems

Standard: III: Apply scientific principles to natural resource management activities.

Benchmark: III-A: Apply scientific principles to natural resource management activities.

Performance Standard: 1. Develop a research/monitoring plan to inquire about a natural resource topic. 2. Conduct a research/monitoring activity for a natural resource topic. 3. Produce a technical report of results/findings.

Student Learning Objectives. Instruction in this lesson should result in students achieving the following objectives:

1. Identify basic career information related to environmental science.
2. Describe several environmental science careers.
3. Identify leaders in the conservation movement.

List of Resources. The following resources may be useful in teaching this lesson:

Recommended Resources. One of the following resources should be selected to accompany the lesson:

Porter, Lynn, et al. *Environmental Science and Technology*. 2nd Edition. Upper Saddle River, New Jersey: Prentice Hall Interstate, 2003. (Textbook and Activity Manual, Chapter 30)

Lee, Jasper. *Natural Resources and Environmental Technology*. Danville, Illinois: Interstate Publishers, Inc., 2000. (Textbook, Chapter 4)

Other Resources. The following resources will be useful to students and teachers:

Turk, Jonathan and Amos Turk. *Environmental Science*. 3rd Edition. New York: CBS College Publishing, 1984.

Arms, Karen. *Environmental Science*. New York: Holt, Rinehart and Winston, 1996.

List of Equipment, Tools, Supplies, and Facilities

Writing surface
Overhead projector
Transparencies from attached masters
Copies of student lab sheets
Phone books

Terms. The following terms are presented in this lesson (shown in bold italics):

Career
Entrepreneur
Job

Interest Approach. Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

Ask students to stand if their answer to any of the following questions is yes. Do you like to work with animals? Do you like to work with plants? Do you like to be outdoors? Do you like to help people? Do you want to do something that will help your environment? By now, most, if not all, of the students will be standing. Explain that careers in natural resources will meet many of these qualifications. Ask the students to think of people they know that work in careers in natural resources. Make a list of the careers on the board.

Summary of Content and Teaching Strategies

Objective 1: Identify basic career information related to environmental science.

Anticipated Problem: What is the basic career information related to environmental science?

- I. The first step in deciding whether or not a career is right for you is to find out about it. Information can be found in several places. Books are available from libraries and guidance counselors that discuss the basic information about a variety of jobs and careers. Information can also be looked up on the Internet. One of the best resources is to talk to people that already work in the career.
 - A. A **job** is a part of a career that involves specific work and duties. Finding a job that's a part of your future career goal should be the next step in determining if a career is for you. A **career** is all the jobs or occupations in a person's lifetime. A person can have many careers.
 - B. Some people prefer to work for themselves rather than work for other people. Someone who provides a product or service for a profit is known as an **entrepreneur**. Entrepreneurs are self-employed and often hire other people to help them meet their business obligations.

Use TM: A1–5A to review the terms covered in this objective. Ask students to think about careers that interest them. Make a list of these on the board.

Objective 2: Describe several environmental science careers.

Anticipated Problem: What careers are related to environmental science?

- II. Many careers are related to environmental science. They are in the areas of soil and water conservation, air quality, wastewater management and treatment, forestry and horticulture, wildlife protection, weather and climate, and education and communication.
 - A. Careers in soil and water conservation include soil conservationist, soil scientist, and water quality technician. These and many other careers related to soil and water conservation require knowledge of soil structure and water quality. A background in science, math, and agriculture would be helpful. Jobs are available from entry level to professional level engineers and scientists.
 - B. Careers in air quality include air quality technician and air quality engineer. These professions require an understanding of air and how to test its quality. Careers are available from entry level to professional level requiring college degrees.
 - C. Careers in solid waste management and wastewater management and treatment include wastewater treatment technician and portable sanitation technician. These professions can be found with state and local government agencies and manufacturing plants.

- D. Careers in forestry and horticulture include forester and environmental horticulturist. These and many other careers in forestry and horticulture require a minimum of an associate's degree, many requiring a more advanced degree. These professions are primarily outdoors and require a number of hands-on skills.
- E. Careers in wildlife protection fisheries biologist and exotic animal technician. These careers can involve both plant and animal wildlife species both on the land and in the water. These careers are with the state and federal governments and in private industry.
- F. Careers in weather and climate include cartographer and meteorologist. These and other careers in this industry require a college degree and training. These jobs are usually with the government or in private business.
- G. Careers in education and communication include a tour guide or teacher. Many of these jobs require a college education and training.

Use TM: A1–5B to review the careers related to environmental science. If time permits, allow students to look up additional information about these careers on the Internet and report their findings to the class.

Objective 3: Identify leaders in the conservation movement.

Anticipated Problem: Who were the leaders of the conservation movement?

- III. There are many people who have had an impact on the conservation movement over the past few centuries. Some of these people include John Muir, Theodore Roosevelt, Franklin Roosevelt, Aldo Leopold, Gifford Pinchot, Hugh Bennett, and Rachel Carson.
 - A. John Muir (1838–1914) was partly responsible for the development of the Yellowstone and Sequoia National parks. It was through his encouragement that President Theodore Roosevelt established these parks. Muir was also responsible for starting the Sierra Club, whose purpose is to promote conservation. A forest in California was also named for John Muir.
 - C. Theodore Roosevelt (1858–1919) and Franklin Roosevelt (1882–1945) were both U.S. Presidents. Theodore Roosevelt was responsible for passing legislation to help protect our natural resources. He is considered the “father of the conservation movement”. Franklin Roosevelt was the president who set up the Soil and Water Conservation Department within the U.S.D.A.
 - D. Aldo Leopold (1886–1948) is noted for applying ecology to wildlife management. Leopold believed that people should enjoy nature but not destroy it in the process. His book *Game Management* was used to help educate future wildlife biologists.
 - E. Gifford Pinchot (1865–1946) also authored a book, his was titled *The Fight for Conservation*. Pinchot’s efforts focused on the conservation of forests. He was one of the first leaders of what eventually became known as the U.S. Forest Service.
 - F. Hugh Bennett (1881–1960) was the first person to run the Soil Conservation Service. He is known as the “father of soil conservation.” He promoted the use of scientific investigation in determining soil needs.

- G. Rachel Carson (1907–1964) was responsible for making people aware of the problems caused by pesticides. She was a biologist and a writer who authored a book titled *Silent Spring*.

Use TM: A1–5C to review the names of historical people involved in the conservation of natural resources. Break the students up into groups to look up additional information about these famous people.

Review/Summary. To review and summarize the information in this lesson, have the students define the terms and answer the anticipated questions.

Application. To apply the objectives in this lesson, refer to Chapter 30 of the *Environmental Science and Technology Activity Manual*. LS: A1–5A Careers in Environmental Science can also be used as an additional application for this lesson.

Evaluation. Use the following sample test to evaluate the students' comprehension of the objectives covered in this lesson.

Answers to Sample Test:

Part One: Matching

1 = c, 2 = d, 3 = a, 4 = e, 5 = b

Part Two: Completion

1. entrepreneur
2. job
3. career

Part Three: Short Answer

Many careers are related to environmental science. They are in the areas of soil and water conservation, air quality, wastewater management and treatment, forestry and horticulture, wildlife protection, weather and climate, and education and communication.

Test

Lesson A1–5: Exploring Careers in Natural Resources

Part One: Matching

Instructions. Match the term with the correct response. Write the letter of the term by the definition.

- | | |
|-----------------------|--------------------|
| a. Theodore Roosevelt | d. Aldo Leopold |
| b. Hugh Bennett | e. Gifford Pinchot |
| c. John Muir | |

- _____ 1. Started the Sierra Club
- _____ 2. Applied the science of ecology to wildlife management.
- _____ 3. Known as the “father of the conservation movement.”
- _____ 4. Focused on the conservation of forests.
- _____ 5. Known as the “father of soil conservation.”

Part Two: Completion

Instructions. Provide the word or words to complete the following statements.

- 1. A(n) _____ is someone who provides a product or service for a profit.
- 2. A(n) _____ is a part of a career that involves specific work and duties.
- 3. All the jobs or occupations in a person’s lifetime is called a(n) _____.

Part Three: Short Answer

Instructions. Provide information to answer the following question.

List three career areas related to environmental science.

COMPARISON OF TERMS AND THEIR MEANINGS

- ◆ **Job: Part of a career that involves specific work and duties**
- ◆ **Career: All the jobs or occupations in a person's lifetime**
- ◆ **Entrepreneur: Someone who provides a product or service for profit**

CAREERS RELATED TO ENVIRONMENTAL SCIENCE

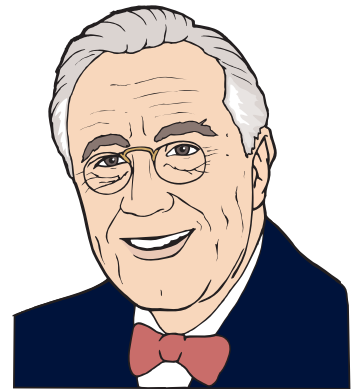
- ◆ **Soil and water conservation**
- ◆ **Air quality**
- ◆ **Wastewater management and treatment**
- ◆ **Forestry and horticulture**
- ◆ **Wildlife protection**
- ◆ **Weather and climate**
- ◆ **Education and communication**

HISTORICAL PEOPLE IN THE NATURAL RESOURCE CONSERVATION MOVEMENT

- ◆ John Muir
- ◆ Theodore Roosevelt
- ◆ Franklin Roosevelt
- ◆ Aldo Leopold
- ◆ Gifford Pinchot
- ◆ Hugh Bennett
- ◆ Rachel Carson



Theodore Roosevelt



Franklin Roosevelt



Muir Woods National Monument



Hugh Bennett

Lab Sheet

Careers in Environmental Science

Instructions:

1. Choose a career area in environmental science that interests you. Write your choice here _____.
2. Look in your local phone book for people who work in this career area.
3. Call, introduce yourself, and ask them if they would be willing to answer some questions for you.
4. Use these questions as a guideline:
 - What is your job title?
 - How long have you been in his job?
 - Have you had any similar jobs in your career?
 - What kinds of education do you have?
 - Do you continue to go to school or get other forms of education?
 - What is the outlook for your career (will there be positions open in the future)?
5. Thank them for their time and end the phone call.
6. Type a one page paper about the career area you chose, include the information you learned in your interview.
7. This paper is due _____.