



Environmental Science

Merit Badge

Home Workbook

Camp Somers....Winnebago S.R.....Sabattis

scout

Counselor notes:

This workbook is designed to help Scouts successfully complete the requirements for Environmental Science Merit Badge at Scout camp. It is strongly recommended that interested Scouts **complete the indicated requirements at home several weeks before attending camp.** This will allow the use of resources not readily available at camp, will allow more time for counselor directed environmental activities at camp, and will leave more time for Scouts to work on other merit badges or to enjoy selected camp activities.

A Scout is Trustworthy. Complete this workbook alone.

***Prepared by the PPC Conservation Committee and camp staffs**



Environmental Science Merit Badge Requirements: 2012

Requirement #1: Make a timeline of the history of environmental science in America. Identify the contribution made by the Boy Scouts of America to environmental science. Include dates, names of people or organizations, and important events.

Suggested activity :

You can do this by assigning dates to the following and putting them in chronological order:

- a. Clean Water Act b. Endangered Species Act c. Yellowstone National Park d. First Earth Day*
- e. U.S. Forest Service f. "Silent Spring" by Rachael Carson g. U.S. Environmental Protection Agency*
- h. Theodore Roosevelt establishes federal agencies to protect natural resources and environment*
- i. Clean Air Act j. Catlin and Thoreau speak out to protect American lands*
- k. Daniel Beard and Ernest Thompson Seton, both naturalists, help organize the BSA*
- l. The BSA develops nature and environment merit badges as well as other nature study activities as part of its programs.*

*** Attach the timeline to this booklet.**

Suggested activity: match these events or people to the description

- | | |
|---|--|
| <i>a. Clean Water Act</i> | _____ <i>anti-extinction legislation</i> |
| <i>b. Endangered Species Act</i> | _____ <i>exposed how pollution was killing birds</i> |
| <i>c. Yellowstone National Park</i> | _____ <i>American writer and artist who promoted land preservation</i> |
| <i>d. First Earth Day</i> | _____ <i>naturalists, help organize the BSA</i> |
| <i>e. U.S. Forest Service</i> | _____ <i>started reducing respiratory problems</i> |
| <i>f. "Silent Spring" by Rachael Carson</i> | _____ <i>US government starts protecting resources</i> |
| <i>g. U.S. Environmental Protection Agency</i> | _____ <i>helped organize and start the BSA</i> |
| <i>h. Theodore Roosevelt establishes federal agencies</i> | _____ <i>first US national park</i> |
| <i>i. Clean Air Act</i> | _____ <i>supervises Federal forests</i> |
| <i>j. Catlin and Thoreau</i> | _____ <i>nation-wide focus on environment</i> |
| <i>k. Daniel Beard and Ernest Thompson Seton</i> | _____ <i>improved water quality with new laws</i> |



Requirement #2: Define the following terms: population, community, ecosystem, biosphere, symbiosis, niche, habitat, conservation, threatened species, endangered species, extinction, pollution prevention, brownfield, ozone, watershed, airshed, nonpoint source, hybrid vehicle, fuel cell.

****Giving examples of each term will help you understand it and make it easier when discussing this requirement with your counselor.***

1. population:

Examples:

2. community:

Examples

3. ecosystem:

examples

4. biosphere:

examples

5. symbiosis:

examples

6. niche:

examples

7. habitat:

examples

8. conservation:



9. threatened species:

Examples in New Jersey:

10. endangered species:

Examples in New Jersey

11. extinction:

Examples in the USA

12. pollution prevention:

Example #1:

Example #2

13. brownfield:

examples

14. ozone:

Where is it produced on Earth?

Why is it important to survival of life on Earth?

15. watershed:

Example:

What watershed is your town in?



16. airshed:

Why are citizens of New Jersey concerned about air pollution produced in Pennsylvania?

17. non-point source:

Example #1:

Example #2:

A point source of pollution is easier to detect and control. Why?

18. hybrid vehicle:

What is the advantage of a hybrid vehicle?

19. fuel cell:

What is the advantage of a fuel cell as a source of energy?

Requirement #3: Do ONE activity in EACH of the following categories (using the activities in this {the merit badge} pamphlet as the basis for planning and carrying out your projects): A. Ecology B. Air Pollution C. Water Pollution D. Land Pollution
E. Endangered Species F. Pollution Prevention, Resource Recovery, and Conservation

****It is suggested that you do the following at home before camp:***

A. Ecology

#3. Discuss what is an ecosystem. Tell how it is maintained in nature and how it survives.

****Read the section of your Environmental Science merit badge book on "The principles of ecology"***

1. What ecosystem is described in "Understanding Ecology" ?

2. The two components of an ecosystem are living things (_____ s) and _____ things in the environment.





3. The interaction of organisms with each other and with the non-living components of their environments is called _____.

4. What are the four most important non-living components of an ecosystem?

5. Describe one "producer- consumer-consumer-decomposer" relationship

In a New Jersey ecosystem.

_____ > _____ > _____ > _____

What are the two kinds of decomposers? _____ and _____

6. Describe the different habitats found in your community or at camp.

****Your community:***

****Your camp***

B. Air Pollution :

2. Record the trips taken, mileage, and fuel consumption of a family car for seven days, and calculate how many miles per gallon the car gets. Determine whether any trips could have been combined ("chained") rather than taken out and back. Using the idea of trip chaining, determine how many miles and gallons of gas could have been saved in those seven days.

****attach this record and report to this booklet.***





C. Water Pollution:

3. Describe the impact of a waterborne pollutant on an aquatic community. Write a 100-word report on how that pollutant affected aquatic life, what the effect was, and whether the effect is linked to biomagnification.

****suggested topics, choose one: fertilizers, pesticides, mercury, PCBs, sewage, farm manure runoff, household cleaners, motor oil.***

****attach your report to this booklet***

D. Land Pollution: ****it is suggested to do this requirement at camp with counselor.***

E. Endangered Species: ****do one or more of these and attach to this booklet.***

1. Do research on one endangered species found in your state. Find out what its natural habitat is, why it is endangered, what is being done to preserve it, and how many individual organisms are left in the wild. Prepare a 100-word report about the organism, including a drawing. Present your report to your patrol or troop.

2. Do research on one species that was endangered or threatened but which has now recovered. Find out how the organism recovered, and what its new status is. Write a 100-word report on the species and discuss it with your counselor.

3. With your parent's and counselor's approval, work with a natural resource professional to identify two projects that have been approved to improve the habitat for a threatened or endangered species in your area. Visit the site of one of these projects and report on what you saw.

F. Pollution Prevention, Resource Recovery, and Conservation:

****do one or both of these and attach to this booklet.***

1. Look around your home and determine 10 ways your family can help reduce pollution. Practice at least two of these methods for seven days and discuss with your counselor what you have learned.

2. Determine 10 ways to conserve resources or use resources more efficiently in your home, at school, or at camp. Practice at least two of these methods for seven days and discuss with your counselor what you have learned.





Requirement #4: Choose two outdoor study areas that are very different from one another, etc.

****it is suggested to do this requirement at camp where environmental measuring equipment, supplies and counselor guidance will be available.***

Requirement #5: Using the construction project provided or a plan you create on your own, identify the items that would need to be included in an environmental impact statement for the project planned.

****It is suggested to do this requirement at camp under the guidance of a counselor.
.....at camp counselors will be selecting a recent camp project to examine.***

****if you do this requirement at home choose an actual construction project in your community or a potential project such as a large parking lot, a new building near a river, or a new housing development on a wetlands site.***

Requirement# 6: Find out about three career opportunities in environmental science. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor

****use home resources such as library or internet to write a short report on your selected career.***

Resources: Environmental Science Merit Badge Handbook

google.com

New Jersey Department of Environmental Protection

<http://www.state.nj.us/dep/>

N.J. Audubon

<http://www.njaudubon.org/>

Environmental Protection Agency

<http://epa.gov/>

