

# Environmental Science Merit Badge:

**This Merit Badge is Eagle Required**

Your Name: \_\_\_\_\_ Home Phone: \_\_\_\_\_

Date Starting This Merit Badge: \_\_\_\_\_

Counselor's Name: \_\_\_\_\_

How to Contact Your Counselor: \_\_\_\_\_

**Note to the Scout and Merit Badge Counselor:**  
**This set of worksheets is meant to facilitate earning this merit badge, but under no circumstances is it meant to be used in lieu of the appropriate BSA merit badge book.**

## Requirements were revised as of 04/01/99.

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.
2. Define the following terms and describe the relationships among them:

population \_\_\_\_\_

community \_\_\_\_\_

ecosystem \_\_\_\_\_

biosphere \_\_\_\_\_

symbiosis \_\_\_\_\_

niche \_\_\_\_\_

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habitat \_\_\_\_\_

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conservation \_\_\_\_\_

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threatened species \_\_\_\_\_

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endangered species \_\_\_\_\_

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extinction \_\_\_\_\_

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3. Do ONE activity in EACH of the following categories (using the activities in this *{the merit badge}* pamphlet as the bases for planning and carrying out your projects):

a. *Ecology*

1. Conduct an experiment to find out how living things respond to changes in their environments. Discuss your observations with your counselor.

Conducted and discussed: \_\_\_\_\_

2. Conduct an experiment illustrating the greenhouse effect. Keep a journal of your data and observations. Discuss your conclusions with your counselor.

Conducted and discussed: \_\_\_\_\_

b. *Air Pollution*

1. Perform an experiment to test for particulates that contribute to air pollution. Discuss your findings with your counselor.

Performed and discussed: \_\_\_\_\_

2. Conduct a study to test the effects of acid rain on plants. Discuss your findings with your counselor.

Conducted and discussed: \_\_\_\_\_

c. *Water Pollution*

1. Conduct an experiment to show how living things react to thermal pollution. Discuss your observations with your counselor

Conducted and discussed: \_\_\_\_\_

2. Conduct an experiment to identify the methods that could be used to mediate (reduce) the effects of an oil spill on waterfowl. Discuss your results with your counselor.

Conducted and discussed: \_\_\_\_\_

d. *Land Pollution*

1. Conduct an experiment to illustrate soil erosion by water. Take photographs or make a drawing of the soil before and after your experiment, and make a poster showing your results. Present your poster to your patrol or troop.

Conducted, documented, presented: \_\_\_\_\_

2. Perform an experiment to determine the effect of an oil spill on land. Share your journal and discuss your conclusions with your counselor.

Performed and discussed: \_\_\_\_\_

e. *Endangered Species*

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.

Researched, report prepared, report presented: \_\_\_\_\_

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.

Researched, report prepared, discussed: \_\_\_\_\_

f. *Resource Recovery*

1. Perform an experiment on packaging materials to find out which ones are biodegradable. Discuss your conclusions with your counselor.

Experiment performed, discussed: \_\_\_\_\_

2. Find out if your local community has a recycling program in effect. If it does, find out what items are recycled, and who pays for recycling. If your community does not have a recycling program, write questions for and conduct a survey on recycling. Include questions about attitudes toward

recycling, what should be recycled, and your community's willingness to support a recycling program. Discuss your findings with your counselor.

Researched and discussed: \_\_\_\_\_

4. Build an ecosystem in a bottle. Include soil, plants, fungi, and small animals found in your local environment. Maintain the ecosystem for at least seven days after completing construction of the ecosystem. Observe it daily, and keep a record of your observations. Discuss your observations with your counselor.

Ecosystem built, maintained, observed, discussed: \_\_\_\_\_

Observations:

Day 1: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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Day 2: \_\_\_\_\_

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Day 3: \_\_\_\_\_

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Day 4: \_\_\_\_\_

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Day 5: \_\_\_\_\_

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Day 6: \_\_\_\_\_

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Day 7: \_\_\_\_\_

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5. Choose an outdoor area to study. In your study area, do ONE of the following:

- a. Mark off three study plots of four square yards each, and count the number of species found there. Then estimate how much space is occupied by each species found in the plots. Make a chart, graph, or table to compare the plots. Write a report that adequately discusses the biodiversity and population density of your study area. Discuss your report with your counselor.

Outdoor area location: \_\_\_\_\_

Number of species found: \_\_\_\_\_

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Space occupied by each species: \_\_\_\_\_

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Chart/graph/table attached: \_\_\_\_\_

Report attached: \_\_\_\_\_

- b. Make four visits to the study area, staying for at least 30 minutes each time, to observe the living and nonliving parts of the ecosystem. Keep a journal of your observations, including a discussion of differences noted during the four visits. Write a report on your observations and discuss it with your counselor.

Dates of visits and observations:

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7. Develop a project that would help solve an environmental problem, reduce an environmental impact, or affect environmental awareness in your community. Include plans for a specific project that could be done by your patrol or troop.

Project description: \_\_\_\_\_

8. Discuss three possible careers in the field of environmental science. Identify the education that you would need to pursue ONE of these careers.

Three careers discussed with counselor:

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Education needed for one of these careers:

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BSA Advancement ID#: 7  
Pamphlet Revision Date: 1998  
Page revised on: 04/01/99

**In completing all requirements for this merit badge, I have completely read the appropriate BSA merit badge book, and discussed same with my counselor.**

\_\_\_\_\_  
**signed**

\_\_\_\_\_  
**date**