ENVIRONMENTAL SCIENCE MERIT BADGE REQUIREMENTS

Additional checkoff sheets and helps are available from ScouterMom.com.

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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: 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.					
3. Do ONE activity from seven of the following categories (using the activities in this pamphlet as the basis for planning and projects):					
3A. Ecology					
(1) Conduct an experiment to find out how living things respond to changes in their environments. Discuss your observations with your counselor.					
(2) Conduct an experiment illustrating the greenhouse effect. Keep a journal of your data and observations. Discuss your conclusions with your counselor.					
(3) Discuss what is an ecosystem. Tell how it is maintained in nature and how it survives.					
3B. Air Pollution					
(1) Perform an experiment to test for particulates that contribute to air pollution. Discuss your findings with your counselor.					
(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.					
(3) Explain what is acid rain. In your explanation, tell how it affects plants and the environment and the steps society can take to help reduce its effects.					
3C. Water Pollution					
(1) Conduct an experiment to show how living things react to thermal pollution. Discuss your observations with your counselor.					
(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.					

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G. Pollination (1) Using photographs or illustrations, point out the differences between a drone and a worker bee. Discuss the stages of bee development (eggs, larvae, pupae). Explain the pollination process, and what propolis is and how it is used by honey bees. Tell how bees make honey and beeswax, and how both are harvested. Explain the part played in the life of the hive by the queen, the drones, and the workers.					
(2) Present to your counselor a one-page report on how and why honey bees are used in pollinating food crops. In your report, discuss the problems faced by the bee population today, and the impact to humanity if there were no pollinators. Share your report with your troop or patrol, your class at school, or another group approved by your counselor					
(3) Hive a swarm OR divide at least one colony of honey bees. Explain how a hive is constructed.					
3H. Invasive Species					
3H-1. Learn to identify the major invasive plant species in your community or camp and explain to your counselor what can be done to either eradicate or control their spread.					
3H-2. Do research on two invasive plant or animal species in your community or camp. Find out where the species originated, how they were transported to the United States, their life history, how they are spread, and the recommended means to eradicate or control their spread. Report your research orally or in writing to your counselor.					
3H.3. Take part in a project of at least one hour to eradicate or control the spread of an invasive plant species in your community or camp.					
4. Choose two outdoor study areas that are very different from one another (e.g., hilltop vs. bottom of a hill; field vs. forest; swamp vs. dry land). For BOTH study areas, do ONE of the following:					
4A. Mark off a plot of 4 square yards in each study area, and count the number of species found there. Estimate how much space is occupied by each plant species and the type and number of nonplant species you find. Report to your counselor orally or in writing the biodiversity and population density of these study areas.					
4B. Make at least three visits to each of the two study areas (for a total of six visits), staying for at least 20 minutes each time, to observe the living and nonliving parts of the ecosystem. Space each visit far enough apart that there are readily apparent differences in the observations. Keep a journal that includes the differences you observe. Discuss your observations with your counselor.					
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.					

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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, and explain why this profession might interest you.					
Completed					
Presented					