

ENVIRONMENTAL SCIENCE

Prepared by:

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Target Group:

Second year campers and older

Time Allotted:

Two, two-hour blocks

Pre-Requisites:

None

Materials Needed – Staff:

Necessary supplies for each of six different experiments in the six areas of study

Materials Needed – Scout:

Pencil and Paper

Instructional Goal:

Upon completion of this activity the scout will possess a good introductory base of knowledge in environmental science. This includes understanding of basic environmental science concepts, knowledge of the causes and effects of pollution, and the interrelation of all parts of the environment to one another. The scout will further be familiar with observation and recording techniques used in studying an area. The scout should also be introduced to possible careers in the area of environmental science.

MONDAY

Requirement 1

Describe the meaning of environmental science in your own words. Explain how you think we can use science to understand, conserve, and improve our environment.

Requirement 2

- (a) Choose an area approved by your counselor and observe (sight, sound, and smell) its ecosystem over a two-day period.
- (b) Make notes about the living, nonliving (e.g. rocks) and formerly living components. Include information about interactions among the components, including the food chain, predators, native species, and invasive species) and identify how human activities have affected the ecosystem.

**Note: Set-up this experiment on Monday for observation and discussion throughout the week.*

**Experiment: The scouts will create a terrarium. To start you will have a 2 liter pop bottle that has the top cut off about $\frac{3}{4}$ of the way up (SAVE THIS PIECE). Start by adding a small layer of gravel in the very bottom to resemble an aquifer system. Following that you will add some smaller rocks, followed by a layer of top soil. Then scouts will need to find some living organisms to place in the terrarium (plants, insects, etc.). After these have been placed add about $\frac{3}{4}$ of a cup of water. After all contents are placed inside tape the top of the bottle back on with packing tape, and make sure the bottle is sealed tightly and then place in sun on experiment table.
-consider using some pre gathered materials / purchasing them, otherwise have scouts forage nearby the lodge
-THE TABLE SHOULD BE PLACED NEAR THE EDGE OF THE PATIO SO THAT IT WILL BE IN THE SHADE FOR MOST OF THE AFTERNOON. Otherwise, the terrariums will boil and ruin the experiment*

Tuesday

Requirement 7

Identify five items in your household that will become hazardous waste. Explain how they should be properly stored, what special care is needed for disposal, and proper disposal options available in your area.

Requirement 8

Learn about the importance of pollination to agriculture, including the economic costs and benefits. Identify four crop-pollinator pairs. Explain the relationship of pollinators to agriculture.

Requirement 2(cont...)

Check on experiment

Wednesday

Requirement 3

Learn what Particulate Matter (PM) is, how PM gets into the air, what the harmful effects of PM are, and what is being done to reduce PM in the air. Then, perform an experiment to test for particulates that contribute to air pollution.

**Note: Set-up this experiment on Wednesday so pollution from Family Night may be used in the results. Observations and conclusions can be drawn on Thursday.*

*Experiment: Instructor and scouts will select 3 locations around Camp Geiger to place a piece of clear packing tape. When locations are selected instructor and scouts will go and place these pieces of tape carefully wrapping the tape where the sticky side is facing outwards to collect pollutants. BE SURE TO NOT TOUCH THE STICKY PART OF THE TAPE.

Requirement 9

In your community or camp, investigate two invasive plant or animal species. Learn where the species originated, how they were transported to this ecosystem, their life history, how they are spread, how they impact the native ecosystem, and the recommended means to eradicate or control their spread.

Requirement 2(cont...)

Check on experiment

Thursday

Requirement 4

Learn about the Clean Water Act. Make notes on when it was passed, its environmental goals, what progress has been made and what remains to be done to achieve the law's goals. Describe the impact, benefits, and costs of the law as well as what is required to implement and enforce the law.

* Will need to do this in the museum using the Ipads

Requirement 6

(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.

**Note: Scouts only need to do one of the previous requirements, but allow them a choice so as to give the scouts a larger selection of species to write about Use the endangered species cards to offer the scouts guidance on expectations. Scouts will need to verbally present these reports to the group, so you may have to continue the verbal presentations on Friday.*

** Will need to do this in the Museum using the Ipad*

Requirement 11

Identify three career opportunities that would use skills and knowledge in the environmental science field. Pick one and research the training, education, certification requirements, experience, and expenses associated with entering the field. Research the prospects for employment, starting salary, advancement opportunities and career goals associated with this career. Discuss what you learned with your counselor and whether you might be interested in this career.

**Will need to do this in the museum using the Ipad*

Friday

Requirement 5

Learn about the erosion process and identify an example of where erosion occurs. Determine where the eroded material ends up and how erosion can be minimized.

Requirement 10

Identify the environmental impact topics that would need to be addressed for a construction project such as building a house, adding a new building to your Scout camp, or one you create on your own that is approved by your counselor. Evaluate the purpose and benefit of the proposed project, alternatives (including a no-action alternative), and any environmental consequences. Discuss with your counselor.

Requirement 3(cont...)

Check on experiment