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## Cub Scout and Webelos Nova Award

# Down and Dirty (Earth Science)

### **Cub Scout and Webelos Nova Award for Science**

- 1. Choose A or B or C and complete ALL the requirements.
  - A. Watch an episode or episodes (about one hour total) of a show about Earth, the weather, geology, volcanoes, or oceanography. Then do the following:
    - i. Make a list of at least two questions or ideas from what you watched.
    - ii. Discuss two of the questions or ideas with your counselor.
  - B. Read (about one hour total) about Earth, the weather, geology, volcanoes, or oceanography. Then do the following:
    - i. Make a list of at least two questions or ideas from what you read.
    - ii. Discuss two of the questions or ideas with your counselor.
  - C. Do a combination of reading and watching (about one hour total) about Earth, the weather, geology, volcanoes, or oceanography. Then do the following:
    - i. Make a list of at least two questions or ideas from what you read and watched.
    - ii. Discuss two of the questions or ideas with your counselor.

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	I chose option: A B C									
Name(s) of things I watched and/or read:  i. I made a list of at least two questions from what I read and watch.										
	Counselor's okay Date									
2.	nplete ONE adventure from the following list. (Choose one that you have not already ned.) Discuss with your counselor what kind of science, technology, engineering, or math used in the adventure.  Requirement 2 (circle the Adventure you completed)									
	Wolf Cub Scouts       Bear Cub Scouts       Webelos Scouts         Collections and Hobbies       Critter Care       Adventures in Science         Digging in the Past       Super Science       Earth Rocks!         Grow Something									
☐ I discussed what kind of science, technology, engineering, or math was used in the Adventure.										
	Counselor's okay Date									



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3. Investigate: Choose A or B or C or D and complete ALL the requirements

### A. Volcanoes Erupt

- i. How are volcanoes formed?
- ii. What is the difference between lava and magma?
- iii. How does a volcano both build and destroy land?
- iv. Build or draw a volcano model. If you build a working model, make sure you follow all safety precautions including wearing protective glasses for your volcano's eruption. If you draw a volcano, be sure to draw a cross section and explain the characteristics of different types of volcanoes.
- v. Share your model and what you have learned with your counselor.

#### B. Rock On

- i. What minerals are common in your state? Make a collection of three to five common minerals and explain how they are used
- ii. Are these minerals found in sedimentary, igneous or metamorphic rock?
- iii. Explain or demonstrate the difference in formation of the three major types of rocks. Which types of rocks are common in your area?
- iv. Share your collection and what you have learned with your counselor

### C. Weather Changes Our World

- i. Make three weather instruments out of materials around your home. (Examples include a rain gauge, weather vane, barometer, anemometer, and weather journal.) Use these and another method that is readily available (i.e., thermometer, eyes, older person's joints, etc.) for a total of four methods to monitor and predict the weather for one week. Keep a log of your findings. Which instrument provided the most accurate information?
- ii. Keep a weather journal for a week. Include your predictions and the predictions of a local meteorologist. Do your predictions match those of the local meteorologist? Do your predictions match the weather that occurred? How can the predictions become more accurate?
- iii. Discuss your work with your Counselor
- D. Animal Habitats: Choose TWO of the following animal habitats and complete the activity and questions. At least one habitat should be close to your home (within 50 miles). Visit at least one of the habitats. Once you have completed the activity and questions, discuss the habitats and the activities with your Counselor.

### i. Prairie

Draw or model a food web with at least five consumers and two producers that live in the prairie habitat. What is the difference between consumers and producers? Predators and prey? What would happen if one of the animals in the food web disappeared?



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### ii. Temperate Forest

Research the two main categories of trees in the temperate forest (coniferous and deciduous). Why are their leaves different? How are their seeds different? Put a twig from a coniferous tree (cone-bearing tree with needles) in a cup of water and tightly fasten a clear plastic bag around the needles. Put a twig from a deciduous tree (leafy tree that loses its leaves in the fall) in a cup of water and tightly fasten a clear plastic bag around the leaves. Observe what happens and draw pictures of your observations. Think of an explanation for what occurred and discuss your explanation with your Counselor.

### iii. Aquatic Ecosystem

With a parent's permission and guidance, visit an aquatic habitat near your home. Examples include a stream, river, lake, pond, ocean, and wetland (a marsh or swamp). Draw or photograph the area. What are the most common types of plants growing there? What animals did you see? Did you see, hear, or smell any evidence of other animals? (Your evidence might include things like bird calls, splashes of fish or frogs jumping, tracks, feathers, or bones.) How do aquatic ecosystems affect your life? How have humans affected the ecosystem? (Look for signs of humans such as trash and bridges or walkways.) How do you think humans have affected the ecosystem in ways you cannot see? (Think about fertilizer and pesticides washing off your lawn and flowing into a stream. How would this affect creatures that live in the water?) What can you do to improve the quality of the ecosystem?

### iv. Temperate or Subtropical Rain Forest

Describe the three main levels of the rain forest (canopy, understory, and forest floor). Make a drawing or model showing examples of animals and plants that live at each level. Choose an animal or plant from each level and explain how it is adapted to its particular place in the rain forest.

### v. Desert

Choose a desert animal or plant. Make a model of it, draw it, or describe it. Explain how it is particularly well adapted to survive in a place where there is very little water. How would the desert be different if this plant or animal were not there?

### vi. Polar Ice

Research an animal that can be found in the polar ice habitat. Draw or make a model of the animal and name three characteristics that make it well adapted for life in the very cold and snowy environment.

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vii. Tide Pools

Explain how a tide pool is formed and describe several animals that are found in tide pools. Make a model or draw a diagram of a tide pool at a high intertidal zone and a low intertidal zone. Include animals found in tide pools and explain how they adapt to their constantly changing environment.

	their constantly changing environment.											
Requirement 3 (choose A or B or C or D)												
I cho	se option:	□ A	☐ i)	☐ ii)	☐ iii)	□iv)	□v)					
		□В	☐ i)	☐ ii)	□ iii)	□iv)						
		□С	☐ i)	☐ ii)	□iii)							
		$\square$ D	☐ i)	☐ ii)	□ iii)	□iv)	□v)	□vi)	□vii)			
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Visit.	Visit. Choose A or B and complete ALL the requirements.											
as se st ar i.	investigate a particular area of science. How could this investigation make the world better?											
B. Explore a career associated with earth science. Find out what subjects you would need to study as you get older. What kind of education would you need in the future to help explore Earth? What types of people other than geologists explore Earth? Discuss with your counselor what is needed to have a career in earth science.												
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I chose option: ☐ A ☐ i) ☐ ii)												
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