



Royal Rangers

Merit Requirements: **Gold-Bordered Merit**

ENVIRONMENTAL SCIENCE

Note: This merit or the Nature Study Merit is required to earn the Gold Medal of Achievement.

1. Conduct an experiment to determine the rate of decomposition of at least ten common materials. The experiment should last for at least one month. Answer the following questions:
 - a. Which materials biodegraded rapidly?
 - b. Why do you think this happened?
 - c. Which materials were not affected at all? Why?
 - d. Does biodegradation happen more rapidly in dry or in wet environments?
2. Write a plan to reduce nonbiodegradable waste in the home.
3. Explain why ecologists use quadrats to study the environment. Explain how to lay out a quadrat.
4. Lay out a 3' x 3' quadrat. Estimate the fraction of the space covered by each kind of plant in the quadrat. Identify the different kinds of insects found. Describe the physical and biological characteristics of the study area.
5. Describe one biogeochemical cycle. Choose one of the following: nitrogen, carbon, or water.
6. Study the population growth rate of a plant or animal. Discuss the factors that may limit population growth. Describe the factors that contribute to population growth.
7. Define these terms: endangered, threatened, extirpated, and extinct.
8. Develop a plan to reduce water usage in your home.
9. Obtain a list and pictures or drawings of at least five animals in your state. Write a 300-word report on one of those animals.
10. Take part in a local cleanup or restoration effort. This can be done by yourself or with a group of Royal Rangers.
11. Obtain a fact sheet from a local agency on their efforts to reduce pollutants.