Lichen Project Research and Proposal

Field Biology

For this project, you will investigate lichens at Crescent Valley High School. Your goal will be to evaluate the correlation between lichens and one other abiotic or biotic factor. As you did with your water quality report, the document you create today will be a proposed plan for your study. You should work individually on this assignment. When you are done, please e-mail your work as a Microsoft Word attachment to dan.bregar@corvallis.k12.or.us with the subject line "per *X your name* lichen proposal".

To begin, you need to familiarize yourself with the types of lichen that are commonly found in our area and what type of factors influence lichens. You have done some of this in class by building your herbarium, but there are some specific questions you need to address before you will be able to come up with an interesting WITRB question for your study. In a Microsoft Word document, answer the questions below in around 3-4 sentences for each question. To do a thorough job of researching this information, you should spend between 30 and 45 minutes on this part of the assignment.

1. Describe **in your own words** what types of factors are known to influence lichens.
2. Explain **in detail** some of the reasons why these factors could affect lichens.
3. Describe **in detail** some reasons why lichens are good indicators of air quality.

Now that you have a foundation of information about lichens and factors that can influence them, you can think about how you might use those factors to investigate a "what is the relationship between" question involving the habitat here at Crescent Valley. Complete the following template in order to create a proposed study. You will be carrying out this investigation during the next 2-3 weeks, so make sure to take into consideration time, weather, and seasonal factors that might affect your ability to collect data. When you have completed the template, add your WITRB question to your Word document.

Proposed Lichen Study:

1. Brainstorm three biotic (living) factors and three abiotic (non-living) factors that might *affect* or *be affected by* lichens. List and describe these factors below:
    a. Biotic Factors
        i. _____
        ii. _____
        iii. _____
    b. Abiotic Factors
        i. _____
        ii. _____
        iii. _____
2. Pick ONE biotic or abiotic factor that you feel would be the most interesting and reasonable to study for your project. Make sure that this is a factor that you will

definitely be able to observe and measure during the timeframe of the project (for example, "snow" would not be a good factor to look at because we can't guarantee that it will snow in the next few weeks). List this factor here: _____

3. Think about the types of measurements you could make for the abiotic or biotic factor you've chosen. Pick a measurement to make that is something you could do in a relatively short amount of time (20-30 minutes at the most), is something that we have the equipment to measure, and that looks at something you find interesting about your factor. Write your measuring word here: _____.
4. Pick one characteristic about lichens to investigate (in other words, pick a measuring word for lichens – like type, number, location, etc.). This characteristic should be one that you feel is likely to affect or be affected by the biotic or abiotic factor you listed in question 2. Describe the characteristic you've picked: "I will be gathering information about the _____ of lichens."
5. In "what is the relationship between" form, write a question that examines the interaction between lichen information you listed in question 3 and the biotic or abiotic factor you listed in question 2. Write your question here: What is the relationship between _____ (the characteristic you've chosen to measure) of lichen(s) in Crescent Valley and _____ (the biotic or abiotic factor you've chosen to look at WITH a measuring word)?