Lichen Bioindicator Activity

Biology

We will be conducting a scientific study (similar to the Brick Pack Study) involving lichens. As part of your background research, answer the following questions and do the following activities.

1. What does it mean to say that lichens are "bioindicators"? What do they indicate, how do they indicate it, and what about lichens makes them such good bioindicators? (15 minutes)

2. If you collect a stick and examine the lichens, what do you think it means if you find only highly **pollution-sensitive** species on your sample? (5 minutes)

3. Do you think the sticks we've collected so far are likely to have a high abundance of highly pollution-sensitive lichen species? Why do you think this? (5 minutes)

For questions 4, 5, and 6, work with a partner and choose a branch from the back of the room. The branch should be covered with as many different kinds of lichens as you can find – there should be at least three different species.

4. Looking at your branch, which two species of lichen on your branch are most **abundant**? What species of lichen was the least abundant (but still there)? (5 minutes)

5. The table below shows the general pollution sensitivity of the lichens we've looked at. Based on this chart, and looking at your stick, do you think your answer to question 3 is correct? Explain your answer. (10 minutes)

Lichen Species	**Sensitivity Description**	**Sensitivity Rating (1 = not very sensitive; 5 = very sensitive)**
Ramalina farinacea	Very low sensitivity	1
Ramalina menziesii	High Sensitivity	4
Evernia prunastri	Very low sensitivity	1
Parmelia sulcata	Very low sensitivity	1
Usnea subfloridana	Moderate sensitivity	3
Hypgymnia physodes	Very low sensitivity	1
Lobaria pulmonaria	Very high sensitivity	5

8. If you were to collect a stick from a very polluted location – for example, near a major freeway – what do you think you would see? Create a hypothetical data table showing the possible abundance of the species we have been studying. (15 minutes)