**Life in the Extreme**

Learning Targets:

* **I can develop hypotheses concerning how living conditions at Craters of the Moon change due to location.**
* **I can use scientific instruments to collect data that will help me to prove/disprove my hypothesis.**
* **I can analyze and share my data results.**

At each site, you will be using the following tools:

* Anemometer *(measures wind speed)*
* Beaufort Wind Scale *(used to estimate wind speed)*
* Laser thermometer *(measures temperature)*
* Light meter *(measures light)*
* Carpenter’s rule *(measures distance – useful when establishing a transect)*
* Measuring tape *(measures distance – useful when establishing a transect)*
* Humidiguide (*measures humidity*)

At each location, follow the steps of the Scientific Method.

* Ask a question.
  + *Look around! What do you see that looks interesting to you that you would like to explore?*
* On each page, you will create a hypothesis. A hypothesis is a statement of prediction.
  + *Form a hypothesis that you will be able to prove/disprove using the instruments listed above.*
* Test your hypothesis using the tools above.
  + *Be sure to record your observations!*
* Write a conclusion statement.
  + *A conclusion statement states whether or not your hypothesis was correct or incorrect, and what data you found to come to that conclusion. You may also share a new wonder that arises from your research. You may illustrate your conclusion or show your data in a large chart.*
* Fill out the forms completely at each site. You may, at a later point, be asked to compare and contrast observations at the different areas.

Example:

*(This sample does not connect to Craters of the Moon. It is just to give you an example of asking a question and forming a hypothesis.)*

* My group is in a wild area in some river bottoms. There is a pasture on one side of a grove of trees. We look around and see that there seems to be a narrow path through the trees down to the stream. We also hear many birds. We wonder if there are more animals in the tree area.
* **Question**: *Are there more animals in the trees?*
* **Hypothesis**: *More animals are active in the trees than in the pasture or by the water.*
* **Method**: We will establish a transect using the tape measurer. We will look for animal sign in a hula hoop-sized circle every 20 feet. We will use our senses and the hand lenses to look closely for signs of animal life including (but not limited to) scat, chewings, tracks, etc. We will keep data as we work. Perhaps our data would look like this:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Location** | **Scat** | **Chewings** | **Tracks** | **Hair/Feathers** | **Other** |
| **Pasture** | 3 | 5 | 4 | 4 |  |
| **Trees** | 5 | 6 | 5 | 3 | 2 broken branches |
| **By the stream** | 6 | 3 | 10 | 4 | 1 den in stream bank |

* **Concluding Statement:** We conclude that there are animals in each habitat. Because the stream is where ALL species are able to access water, there seem to be more obvious signs there. We would like to do further research to see which area contains more animal **homes**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lava Flow Crack Habitat** | | | | |
| **Question:** |  | | | |
| **Hypothesis:** |  | | | |
|  | **Crack 1**  Width \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Depth\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | **Crack 2**  Width \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Depth\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
|  | **At Surface** | **At Depth** | **At Surface** | **At Depth** |
| **Wind Speed** |  |  |  |  |
| **Temperature**  (use Celsius) |  |  |  |  |
| **Light**  (designate FC or KFC) |  |  |  |  |
| **Humidity**  (optional) |  |  |  |  |
| **Using our senses** |  |  |  |  |
| **Concluding Statement** |  | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cinder Flats Habitat** | | | | |
| **Question:** |  | | | |
| **Hypothesis:** |  | | | |
| **Transect:** | **Start** | **10 meters** | **20 meters** | **30 meters** |
| **General Description**  **of Location** |  |  |  |  |
| **Wind Speed** |  |  |  |  |
| **Temperature**  (use Celsius) |  |  |  |  |
| **Light**  (designate FC or KFC) |  |  |  |  |
| **Humidity**  (optional) |  |  |  |  |
| **Using our senses** |  |  |  |  |
| **Concluding Statement** |  | | | |

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| --- | --- | --- | --- | --- | --- |
| **Lava Tube Habitat** | | | | | |
| **Question:** | |  | | | |
| **Hypothesis:** | |  | | | |
| **Transect:** | | **Start** | **10 meters** | **20 meters** | **30 meters** |
| **General Description**  **of Location** | |  |  |  |  |
| **Wind Speed** | |  |  |  |  |
| **Temperature**  (use Celsius) | **Ceiling** |  |  |  |  |
| **½ down wall** |  |  |  |  |
| **Floor** |  |  |  |  |
| **Light**  (designate FC or KFC) | |  |  |  |  |
| **Humidity**  (optional) | |  |  |  |  |
| **Using our senses** | |  |  |  |  |
| **Concluding Statement** | |  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Habitat Comparison and Contrast** | | | |
| **Question:** |  | | |
| **Hypothesis:** |  | | |
|  | **Lava Flow Crack Habitat** | **Lava Tube Habitat** | **Cinder Flats Habitat** |
| **General Description**  **of Location** |  |  |  |
| **Average Wind Speed** |  |  |  |
| **Average Temperature**  (use Celsius) |  |  |  |
| **Average Light Reading**  (designate FC or KFC) |  |  |  |
| **Average Humidity**  (optional) |  |  |  |
| **Most significant notice while using our senses and why** |  |  |  |
| **Concluding Statement** |  | | |