

Hastings Cave and Thermal Springs



Recording Sheet

Curriculum Strands: SI, BK – Matter, Earth and Space Stages: 7-15

Distribution of Cave Formations

Do cave formations change as you go deeper into the cave?

Solution caves like the Newdegate Cave are formed when the soluble limestone or, in this case, dolomite rock is dissolved over time by rainfall containing **carbonic acid** (H_2CO_3) trickling down through crevices and cracks in the rock to the water table.

When the water table falls, cave formations, known as **speleothems**, start to grow. As rainwater, a weak solution of carbonic acid, trickles through the limestone ceiling, it dissolves minerals such as calcium carbonate, CaCO_3 . Calcium carbonate is also known as calcite and comes from marine shells. Water carries the dissolved calcium carbonate through the rock and, where it reaches the air in the cave, some of the water evaporates, leaving a little calcium carbonate on the surface. This collects and forms the speleothem. Stalactites, stalagmites and helictites are all examples of speleothems.

There are four main zones in the Newdegate Cave: the entrance; the twilight zone, where there is some natural light; the middle zone, where there may be a little natural light; and the deep zone, where there is no natural light at all.

Equipment

You will need:

- hygrometer
- pencil and notebook
- recording sheet

Method

Before starting this project, you should be familiar with the different kinds of speleothems.

1. At each zone in the cave:
 - a. Measure how far you have come into the cave by counting the number of steps you have taken into the cave. Record the temperature and the humidity of the area on your recording sheet.
 - b. Standing on one spot, see how many different types of speleothems (straws, helictites, stalactites, stalagmites, shawls, floors and flowstone) you can see without moving.
 - c. Estimate the length of the longest formation you can see.
 - d. Measure the temperature and humidity and record whether any surface water is visible.
2. On your return to school, plot your data on a bar chart. Label the x-axis with the different categories of speleothems. Make a chart for each area that you visited.

Questions

- Did the number of speleothems change in different areas of the cave?
- Did a particular type of speleothem increase or decrease in number as you moved into the cave?
- Did the size of the longest speleothems increase?
- Was there any variation in the amount of water in different areas of the cave?
- Were the formations larger or smaller where it was wetter?

