**Peppered Moth Simulation**

**Background:**

Industrial melanism is a term used to describe the adaptation of a population in response to pollution. One example of rapid industrial melanism occurred in populations of peppered moths in the area of Manchester, England from 1845 to 1890. Before the industrial revolution, the trunks of the trees in the forest around Manchester were light due to the presence of lichens. Most of the peppered moths in the area were light colored with dark spots. As the industrial revolution progressed, the tree trunks became covered with soot and turned dark. Over a period of 45 years, the dark variety of the peppered moth became more common. In general, birds in the area hunted the moths for food. The camouflage of the moths plays an important role in determining whether the birds could see and hunt their prey.

Go to: [http://www.techapps.net/interactives/pepperMoths.swf](http://www.techapps.net/interactives/pepperMoths.swf)
Click on Pollution & Peppered Moths for Intro

**Procedure:**

1. Click on Bird’s Eye View for Simulation.
2. Select Light or Dark Forest.
3. Your role in the simulation is that of a predator. Guide the bird with the mouse to the moths. Click on the moth with the mouse to eat the moth. Every time you eat a moth, you will hear the crunch of his exoskeleton. If you miss the moth, you will hear the bird call. Eat as many moths as possible in the minute you have.
4. Record your data in the results table after each trial.

**Results:**

<table>
<thead>
<tr>
<th>Trial</th>
<th>Forest</th>
<th>Starting Population</th>
<th>Ending Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Light</td>
<td>Dark</td>
<td>Dark</td>
</tr>
<tr>
<td>2</td>
<td>Light</td>
<td>Light</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Dark</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Adapted from CSCOPE
Conclusions:

1. What did the experiment show about how the prey is selected by predators?

2. Which colored moths are best adapted to an unpolluted environment? Use your results to support your answer.

3. Which colored moths are best adapted to a polluted environment? Use your results to support your answer.

4. What would you expect the next generation of moths to look like after Trial 1? Why do you think this?

5. What would you expect the next generation of moths to look like after Trial 3? Why do you think this?

6. What is natural selection?

7. How did the simulation show that natural selection occurred in the moth populations? Use your results to support your answer.

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