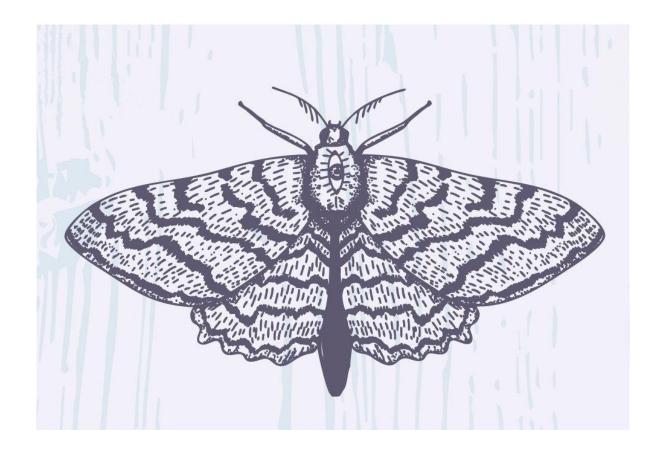


Inquiry Question

How can we observe natural selection in action?



Recall that evolution is the change of a population of organisms from one generation to the next.

Natural selection is the mechanism of evolution. It occurs when organisms that are best suited for the environment reproduce more often. The more successful organisms pass the favourable adaptation to their offspring.

Remember that an adaptation is a trait that has a functional role and allows the organism to be more successful than others in the population.

In this project you will simulate changes in moth population, due to pollution and predation, and observe how species can change over time. You will be able to see how natural selection occurs.



General Instructions

The goal of this project is to see how natural selection occurs.

Materials you'll need:

- the internet
- the following "Peppered Moth" worksheet

Ideas and Hints:

Follow the instructions on the following pages and complete the worksheet on the natural selection of the Peppered Moth.

Project submission:

Once you have finished your assignment submit your completed work to the Biology project drop box.



Natural Selection Activity: Peppered Moth

Name:

Modern evolution theory states that if the frequency of genes in a population changes over time, then the population is evolving.

Peppered moths range in colour from dark to light. The dark moths have the dominant gene for wing scale color and are either DD or Dd. The light-coloured moths have the recessive genes and are dd



Instructions:

To see how peppered moths use camouflage to avoid bluejays... Go to: http://www.biologycorner.com/worksheets/pepperedmoth.html

Click: Natural Selection Simulation

Answer: #1 below

Play for 2 minutes, you are the bluejay eating as many moths as possible. Complete each trial

3-5 times.

Release moths in the lichen-covered forest.

- 1. Before the blue jay starts to eat, what percentage of moths are light-coloured? ** what percentage of moths are dark-coloured? **
- 2. Feed your bluejay for 2 minutes by clicking on as many moths as possible. What percentage of the moth population is light-coloured now? ** What percentage of the moth population is dark-coloured now? **

	Percentage of moths at the BEGINNING of the simulation		Percentage of moths at the END of the simulation	
	Light Moths	Dark Moths	Light Moths	Dark Moths
Trial 1				
Trial 2				
Trial 3				
Trial 4				
Trial 5				

3.	. In the lichen coloured forest, what trait is selected for? **	
	What trait is selected against? **	_



Release moths in the soot-covered forest.

4. Before the blue jay starts to ear	t, what percentage of moths are light-coloured? *
	what percentage of moths are dark-coloured? **

5.	Feed your bluejay for 2 minutes by clicking on as many moths as possible
	What percentage of the moth population is light-coloured now? **
	What percentage of the moth population is dark-coloured now? **

	Percentage of moths at			
	the BEGINNING of the		Percentage of moths at	
	simulation		the END of the simulation	
	Light Moths	Dark Moths	Light Moths	Dark Moths
Trial 1				
Trial 2				
Trial 3				
Trial 4				
Trial 5				

ot covered forest, what is selected against?		or? ** 	
d of selection is chang orests? Circle the co		of moth colours in the	lichen and soot
directional	disruptive	stabilizing	



Analysis:

1. Explain how the environment and the colour of the moths increases or decreases their chances of survival.

- 2. Use what you have observed with the moths in this simulation to explain the concept of "natural selection".
- 3. What would happen if there were no predators in the forest? Would the colours of the moths change over time? Explain your reasoning.