

# Unit 5 Review Adaptation in Animals – Class Set

## Title: Natural Selection Webquest

**Instructions:** Go to each of these websites. Read the online information, and answer the provided questions.

**Link 01:** <https://www.biography.com/people/charles-darwin-9266433>

1. Who was Charles Darwin? What is he known for? Charles Darwin was a British naturalist best known for his Theory of Evolution and his explanation of natural selection.
2. Summarize Darwin's theory of natural selection. Natural selection is the gradual adaptation of a species based on the most effective adaptations.

**Link 02:** <http://www.hras.org/sw/sw11-04.html>

3. Which part of the finch has changed over time? The beak of the finch has changed over time.
4. For each of these diagrams, write what type of food the beak shape is best suited for.



a. seeds \_\_\_\_\_



b. insects \_\_\_\_\_



c. Buds/Fruit \_\_\_\_\_



d. leaves \_\_\_\_\_

5. Did Darwin first believe that each finch he found was a different species? Was he right or wrong?  
He believed that they were unrelated species. He was incorrect, they all shared a common ancestor
6. How did organisms arrive at the Galapagos Islands? Organisms likely arrived in storm debris from the mainland and then evolved due to the conditions on the islands.

**Link 04:** <https://www.treehugger.com/natural-sciences/what-selective-breeding.html>

7. What is selective breeding (artificial selection), and how is it different from natural selection? Selective breeding is the process where humans decide what traits they want an animal to have and then breed them to produce those traits.
8. List two plants and two animals that humans have selectively bred. Answer vary: cabbage, broccoli, cauliflower. Chickens, Dogs cattle

**Link 05:** <https://treesforlife.org.uk/forest/forest-ecology/mimicry/>

9. What is mimicry? Mimicry is where a harmless species evolves the appearance of something much more dangerous. How does mimicry benefit an organism? It keeps them from being eaten by predators.

**Link 6:** <https://www.nationalgeographic.com/magazine/2009/08/mimicry/#/01-leaves-toad.jpg>

Look at the images in the slideshow. Click on the organisms that are hiding in plain sight.

10. Give three examples of mimicry. Answers vary.

**Link 7:** <https://sciencing.com/four-factors-natural-selection-8140305.html>

11. How does natural selection act work regarding individuals and populations? Individuals do not change traits. Those individuals that have traits that allow them to survive and reproduce will pass those traits on to their offspring. The species changes as those traits are selected for over and over again.

12. What are the 4 components of natural selection?

Natural selection occurs if four conditions are met: reproduction, heredity, variation in physical characteristics and variation in number of offspring per individual.

### Peppered Moth Simulation

At <https://askabiologist.asu.edu/peppered-moths-game/>

13. Why are these moths called “peppered moths?” Their light wings are “peppered” with small dark spots.

14. Where is the first black form of the moth found? Near the center of Manchester in 1848.

15. What was causing the moths to change color? Natural selection favored dark colored moths.

16. What is natural selection? All types of living things have small differences between the individuals in the species. If one of those differences allows the individual to live longer, they will likely have more offspring. As that trait is passed on, the population starts to look more like the successful individual. Over time, the species changes.

17. What is industrial melanism? The evolution of a moth species from light colored to dark colored due to darker surfaces caused by pollution.

18. Why did dark moths have a survival advantage? In a dark forest, the dark peppered moths were shown to have a survival advantage over light moths. Birds were twice as likely to eat a light moth as a dark moth.

19. When Kettlewell recaptured the marked moths, what did he find? Two days later, moth traps were used to recapture the moths. In clean forests, twice as many light moths lived to be recaptured as the dark moths. Only half as many light moths were recaptured in polluted forests. He had experimentally shown that if the moth's color matched the environment, it had a better chance of survival.

### PLAY – first go through how to play

20. Play the role of the bird in both the dark and the light forest. Try to behave as a bird would behave, choosing the moths that are most obvious. At the end of each simulation, record the percent of moths captured on the table.

	Percent Dark Moths	Percent Light Moths
Light Forest		
Dark Forest		

### Final Analysis:

21. Explain how the color of the moths increases or decreases their chances of survival. Darker moths are harder for predators to spot which increases their chance to produce offspring.

22. Explain the concept of the “natural selection” using your moths as an example.

23. What would happen if there were no predators in the forest? Would the colors of the moths change over time? Defend your answer. No, the color would not change because the darker color would no longer provide an advantage.

## **Charles Darwin**

[https://coolsciencelab.com/who\\_wants\\_to\\_live\\_a\\_million\\_years.htm](https://coolsciencelab.com/who_wants_to_live_a_million_years.htm)

24. What are some environmental changes that caused a change for your organism's population? Answers vary
25. Did your organism survive 1 million years?  
A. why or why not?
26. Which factor is the most important for the survival of a species?