

Natural Selection - Peppered Moth Interactive

Directions: Go to the Peppered Moth Interactive page on the internet: peppermoths.weebly.com or use the "Peppered Moth" link on www.biologybynapiet.com

Answer the following questions using the information provided.

1. Where are Peppered moths found?
2. How do Peppered moths avoid predators?
3. How do Peppered moth larvae avoid predators?
4. What is the difference between Carbonia and Insularia Peppered moths?
5. How did the Industrial Revolution affect English forest?
6. What were the theories for why the moths were changing color?
7. What is industrial melanism?
8. Describe the experiments Kettlewell did to determine if Peppered moth melanism is a result of natural selection.

9. Complete three trials of each Birdseye View simulation and record your data. Remember you are a PREDATOR! You eat what is easy to see – do not try to “beat” the game by eating the ones that are harder to see. You will get the wrong answers if you do so.

Light forest simulation

	Trial 1	Trial 2	Trial 3	Average % of moths left
% light moths left				
% dark moths left				

Dark forest simulation

	Trial 1	Trial 2	Trial 3	Average % of moths left
% light moths left				
% dark moths left				

Conclusion: Describe your results and hypothesize why they came out the way they did.

Results –

Hypothesis –

Explain how the population of moths evolve over time due to natural selection. Use complete sentences.

Read the following situations below and identify the 5 points of Darwin's natural selection.

- 1) There are 2 types of worms: worms that eat at night (nocturnal) and worms that eat during the day (diurnal). The birds eat during the day and seem to be eating ONLY the diurnal worms. The nocturnal worms are in their burrows during this time. Each spring when the worms reproduce, they have about 500 babies but only 100 of these 500 ever become old enough to reproduce.



a. What worm has natural selection selected AGAINST? _____

FOR? _____

- b. Darwin's 5 points: Identify the 5 points in the scenario above.

Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____

- 2) There are 3 types of polar bears: ones with thick coats, ones with thin coats and ones with medium coats. It is fall, soon to be winter. The temperatures are dropping rapidly and the bears must be kept warm, or they will freeze to death. Many of the bears have had ~2 cubs each but due to the extreme temperatures, many mothers only have one cub left.



a. What bear will natural selection select AGAINST? _____ FOR? _____

- b. Darwin's 5 points: Identify the 5 points in the scenario above.

Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____

3) In ostriches, there are 2 types: ones that run fast and those that run slowly. The fast birds can reach up to 40 miles an hour. Jackals love to eat ostrich, and they can reach speeds of up to 35-40 miles per hour. A flock of ostrich will lay ~ 10 eggs (each mother only lays 1), but many rodents break into the eggs and eat the fetus before they hatch.



a. What ostrich will natural selection select AGAINST? _____ FOR? _____

b. Darwin's 5 points: Identify the 5 points in the scenario above.

Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____

4) There are two types of rabbits: those that strictly eat grass and those that strictly eat berries and flowers. A drought occurs one year, and the plants have difficulty producing any extras (flowers, berries, etc.). They can only try and keep themselves green. The rabbits have had babies all year long but many are eaten by foxes or hawks. Due to the drought, many have starved to death.



a. What rabbit will natural selection select AGAINST? _____ FOR? _____

b. Darwin's 5 points: Identify the 5 points in the scenario above.

Population has variations. _____

Some variations are favorable. _____

More offspring are produced than survive. _____

Those that survive have favorable traits. _____

A population will change over time. _____

5) Bob believes that giraffes have long necks because they have stretched their necks to try and reach food that is high in trees. Since the parent had stretched its neck, it passed the long neck on to its offspring. Ryan believes that giraffes have long necks because the ones with long necks were able to reach the food, and those with short necks could not and died. The long necked giraffes reproduced, and soon all of the giraffes had long necks.



a. Who thinks like Lamarck? _____

b. Who thinks like Darwin? _____

Biogeography

Read the passage below then answer the following questions.

Evidence from Biogeography

Biogeography is the study of how and why plants and animals live where they do. It provides more evidence for evolution. Let's consider the camel family as an example.

Biogeography of Camels: An Example

Today, the camel family includes different types of camels. All of today's camels are descended from the same camel ancestors. These ancestors lived in North America about a million years ago.

Early North American camels migrated to other places. Some went to East Asia. They crossed a land bridge during the last ice age. A few of them made it all the way to Africa. Others went to South America. They crossed the Isthmus of Panama. Once camels reached these different places, they evolved independently. They evolved adaptations that suited them for the particular environment where they lived. Through natural selection, descendants of the original camel ancestors evolved the diversity they have today.

Questions

1. What is biogeography and what does it provide?
2. Where do all camels come from?
3. Why did camels evolve?

BIOGEOGRAPHY

Biogeography is the study of the distribution of species in a geographic area. Cut out each continent or country and piece together the puzzle pieces based on the distribution of fossils (match the fossil patterns to connect the land masses) to make Pangea. Pangea was a super continent that existed on earth 300 million years ago. Glue Pangea below and answer the questions.

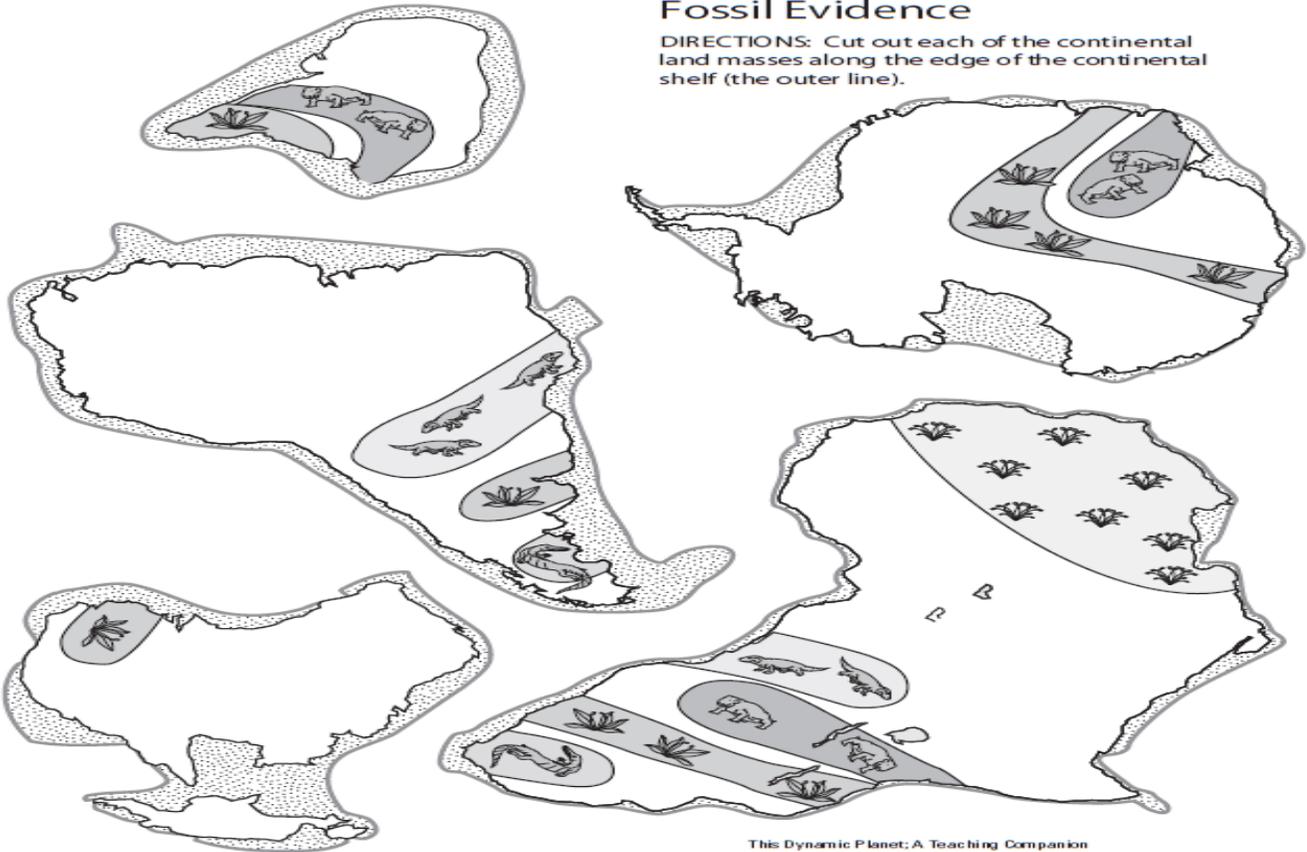
Questions:

1. *What is biogeography?*
2. *Explain why the same alligator-like fossil could be found on both the southern tip of Africa and South America even though they are now separated by an ocean.*
3. *Charles Darwin studied life on the Galapagos Islands off of Western South America. He discovered the organisms on the island were very similar to the organisms found on South America rather than similar to organisms living in a similar environment. Explain this finding.*

Get checked off and signed off before moving on _____

Fossil Evidence

DIRECTIONS: Cut out each of the continental land masses along the edge of the continental shelf (the outer line).



U.S. Department of the Interior
U.S. Geological Survey

This Dynamic Planet: A Teaching Companion
Wegener's Puzzling Continental Drift Evidence
U.S. Geological Survey, 2008
For updates see <<http://volcanoes.usgs.gov/about/edu/dynamicplanet>>