Agriculture Biology Week 2 and 3 Online Work

Please make sure all work is turned into the correct place. For Ms. Ferrell that is on teams. For Mr. Dajani that is on Schoology.

https://sepuplhs.org/high/sgi/teachers/evolution_act11_sim.html

Go to the above website. Complete the student worksheet available on teams, schoology or sites.google.com/view/msferrell.

Watch the following videos

https://www.youtube.com/watch?v=TxmkZBYDPOQ

https://www.youtube.com/watch?v=Q-aGAX27SIo

Create a powerpoint explaining 5 or more pieces of evidence for evolution. What are they and how do they support the theory of evolution?

Read the following article from Khan academy-https://www.khanacademy.org/science/biology/her/tree-of-life/a/species-speciation

Create a worksheet and key that would accompany this article. It must contain 5 True/False questions, 5 Multiple choice question, 5 Fill in the answer questions and 3 short answer questions. The worksheet and key should be in 2 different documents.

Read this article from the Khan academy-https://www.khanacademy.org/science/ap-biology/natural-selection/artificial-selection/a/evolution-natural-selection-and-human-selection

Read the article from the Khan academy title Evolution: Natural selection and human selection. Write 2 paragraphs summarizing the article. In paragraphs 3 and 4 describe 3 or more agriculture products (animal or plant) that you think have gone through artificial selection. Why do you think that? Any evidence to support your ideas?

Do not forget that SAE hours and FFA activity points are due May 15!

Natural Selection

Website: https://sepuplhs.org/high/sgi/teachers/evolution_act11_sim.html

This website requires flash- use on chrome, cannot be completed on a phone. If all you have is access to a phone please contact Ms. Ferrell to set up a zoom meeting where she will go through the lab with you.

NOTE: If you cannot see the entire window of the simulation on your computer, grab the lower right corner of the screen and drag it until the entire window is visible.

Part A: This simulation represents 500,000 years. A bird population exists in the southwestern portion of the island. During this time, mutations may alter the ability of some birds and their descendents to thrive in the environment. Birds with traits that enhance their fitness are more likely to survive and reproduce.

In the southwest, your birds will encounter the environmental conditions listed in the table below. Fill in the second column of the chart with the bird phenotypes that are best suited for each of the conditions.

Environmental condition	Bird phenotype best suited
Seeds	
Edible insects	
No nectar	
Light green foliage	
No predators	

1. Of the phenotypes you selected for the three birds, how fit do you think each phenotype is in the current environment? Explain your reasoning.

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2. Create your birds and record your choices here. You will need to track all three birds.

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3. Watch the animation. Record in the chart for your assigned population what changes occur (including mutations, mutation effects, and population numbers) in each population, and how many years have passed when the change occurs.

Years passed	Mutations	Mutation effects	Population number
50,000			
100,000			
150,000			
200,000			
250,000			
300,000			
350,000			
400,000			
450,000			
500,000			

4. Discuss how the bird populations changed over the course of the 500,000 years. Write a summary of your discussion. For example, what types of mutations occurred? Under what circumstances were the offspring more or less fit as a result of the mutation?

5. Were your ideas about the fitness of each phenotype you selected correct? Explain why or why not.

6. Compare how your bird populations changed with the bird populations of another group of students. Record the similarities and differences you notice.

Part B: A hurricane has hit the island, and some of the birds have been blown to three new areas! Each area has a unique environment. Work with your group to assign each of you to observe one of the three areas.

7. Record in the chart below the environment that exists in each of the three new areas when each bird population arrives. Circle in the first column the name of the area that you have been assigned.

Area	Description of the Environment
Northeast	
Southeast	
Northwest	

8. Which birds you think will be most fit in each new environment and which will be less fit. Record in the space below your ideas, and explain your reasoning.

9. Watch the animation for your assigned area. Record in the chart below the phenotypes of the birds in each population and their environment (food, foliage, predators) each time there is a change in the area during 500,000 years of evolution. Answers will vary. A sample response for Population 1 is shown below.

Years passed	Mutation	Mutation Effects	Environment	Population Number
555,000				
600,000				
650,000				
700,000				
750,000				
800,000				
850,000				
900,000				
950,000				
1,000,000				

10. Discuss the changes that occurred in each of the three areas over 500,000 years.

11. Explain how much the recent birds vary from the original birds after 1 million years of natural selection. How does evolution explain the changes? Use the following terms or phrases in your explanation: natural selection, random mutation, nonrandom selection of favorable traits, reproduction, genetic variation, and extinction.

12. In this activity you worked with a model to simulate natural selection. In what ways did this activity model natural selection well? What aspects of natural selection did the simulation not include?