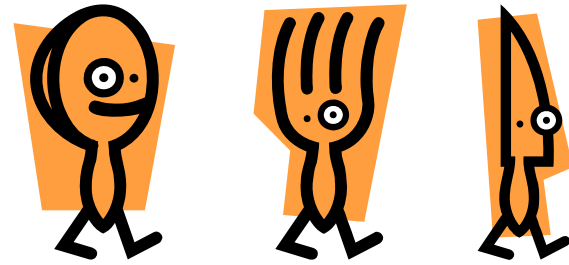


Woolleybooger Simulation

GT Biology
Evolution Unit

Woolleyboogers



Island

Woolleybooger Questions

1. What is a species?

1. a group whose members produce similar anatomical characteristics and have the ability to interbreed and produce viable, fertile offspring

2. What is a population?

1. a group of individuals belonging to one species and living in the same geographic area

Woolleybooger Questions

3. What is variation?

Differences in organisms

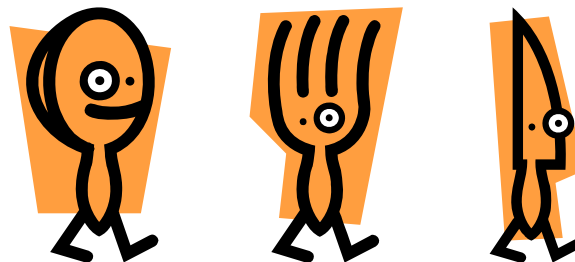
4. What type of variation exists in this population?

3 different types of beaks

5. Is one variation in this population favored in the current environment?

No, because there are about equal numbers for each beak type

Woolleyboogers



Island

You will now simulate Woolleyboogers in their new environment

- Each beak's feeding behavior will be modeled for you.
 - You must use the beak as it is intended
- OR
- You will be eliminated from the simulation.

Woolleybooger Simulation

You must use your beak correctly

Your Fate

- More than 30 beans – live and reproduce
- 20-30 beans – live
- Less than 20 – die

After the Feeding Frenzy

Reproducing boogers
report **HERE**



Dead boogers
report **HERE**



Woolleybooger Data Table

	Generation			
	1	2	3	4
Knife				
Fork				
Spoon				

Woolleybooger Graph

Predict what would happen to the Woolleybooger population over the next 3 generations.

Draw your predictions on the graph.

Woolleybooger Analysis Questions

1. What type of variation exists in this new, post hurricane population?
2. What variation is favored in this new environment?

Woolleybooger Questions

3. What are the sources of variation?
- Mutation- a change in the nucleotide sequence of DNA; the ultimate source of genetic variation
 - Sexual reproduction
 - Independent orientation of homologous chromosomes at metaphase I of meiosis
 - Random fertilization
 - Crossing over

Woolleybooger Questions

4. What is an adaptation?

- An inherited characteristic that enhances an organism's ability to survive and reproduce in a particular environment

5. How did the entire population of Woolleyboogers adapt to their new environment?

- Woolleyboogers changed from having equal amounts of knife, fork, and spoon beaks to having mostly spoon beaks. This allowed the population of Woolleyboogers to get food easier and produce offspring.

6. On what level did this adaptation happen?

- The adaptation happened on the population level; individual species did not switch their beaks in one lifetime.

Analysis Questions

7. What happens to animals that cannot compete as well as other animals in the wild?
8. Suggest a real-life example of the woolleybooger, where one species has a definite advantage over another?
9. Sometimes animals that are introduced into an area that they never lived in before out-compete and endanger resident species. Why do you think this happens?
10. If only one species is considered the “fittest,” why do we still have so many variations among species? Why do some birds have very long pointy beaks, while other birds have short, flat beaks?
11. How do you think diseases affect populations?

Reading

- Read 13.8 on pages 264-5
- During reading: write down questions / parts that were confusing
- After reading: write a one sentence summary for each bold section (3 total)
 - Genetic Variation
 - Mutation
 - Sexual Reproduction

Extension

- Answer this question individually on your own paper:
 - What prevents the elimination of variation in a population when one variety is obviously more competitive in a given environment? (like the spoon beak boogers after the hurricane)
- Discuss your answer with a classmate.
- Read section 13.16 on page 272-3 in *Biology Concepts and Connections*
- During reading: read to see if your answer was correct
- After reading:
 - Revise your original answer if necessary
 - Write a few sentences explaining the differences between heterozygote advantage, frequency-dependent selection, and neutral variation