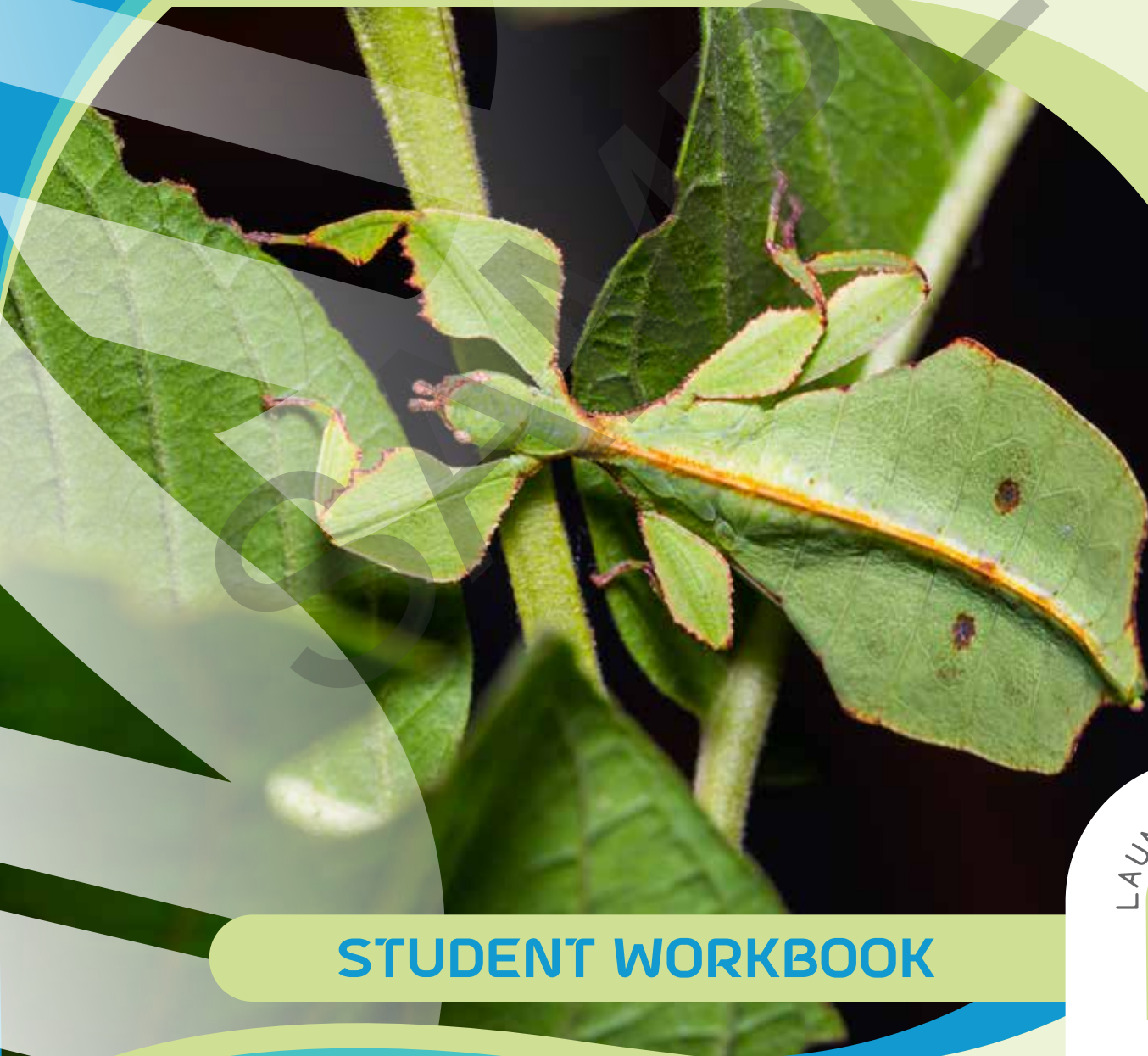


GAME OF SURVIVAL



STUDENT WORKBOOK





LAUNCH



4. There are four colors of beads and each color represents a different imaginary **subspecies**. A subspecies is a distinguishable population of a species that cannot breed with the rest of the species. Using the lists below, give each “bead subspecies” a set of traits. No two subspecies should have the same trait from a category.

5. For added fun, name each subspecies, and draw what it would look like.

Jaw	Body Covering	Limbs	Size
Sharp teeth	Fur	Webbed feet	Males are larger than females
Beak	Scales	Wings	Males are smaller than females
Grinding teeth	Exoskeleton	Fins	Males and females are the same size
Snout	Feathers	Claws	Some males are larger and some are smaller than females

				
Name				
Jaw				
Body Covering				
Limbs				
Size				
Sketch it out!				

→ 6. Cut out the 10 playing cards. Shuffle them and place them face down on your board.

PREDICT: Now that you've had a chance to get the Survival Game set up:

1. Which bead subspecies do you think is most suited for its habitat? Why?
2. Which bead subspecies do you think is least suited for its habitat? Why?
3. What do you think the outcome of the game will be?

TIME TO PLAY

In the Survival Game – just like in real-life – there are “rules” of how to play a game. Check out the rules below:

1. Place 8 beads of each color on the board. You can place them in any of the biomes so long as at least two beads for each subspecies are together in a biome. Ex. You cannot have only one yellow bead in the Terrible Tundra, but you can have three.
2. Pull the card from the top of the deck and follow what it says. If you are asked to remove a subspecies from the board, keep them nearby because they may become offspring later.
3. Before each turn, migrate two beads from each subspecies to a new biome. They do not have to migrate together.
4. The game ends when there is only one subspecies left or you run out of cards in your deck.
5. Have fun!
Make sure you save the masking tape, beads, and your game board for future activities.



REFLECT

1. Write two observations you made during the Survival Game.

FOUNDATIONAL FINCHES

Watching the life of a subspecies play out in a game gives great insight to what happens in real-life. However, a set of cards doesn't capture all of what might happen to a species. Instead, what has happened and continues to happen is determined through careful observation and study.

In this activity, you will consider the origin of the theory of natural selection and test model bird beaks to discover how beak shape determines food accessibility.

LEARNING GOALS:

- ✓ I can use mathematics to explain how natural selection can cause increases or decreases of traits in populations.
- ✓ I can explain how natural selection causes adaptations within populations.
- ✓ I can argue that changes in the environment may cause increases in population size, changed species, or extinction.

NATURAL SELECTION

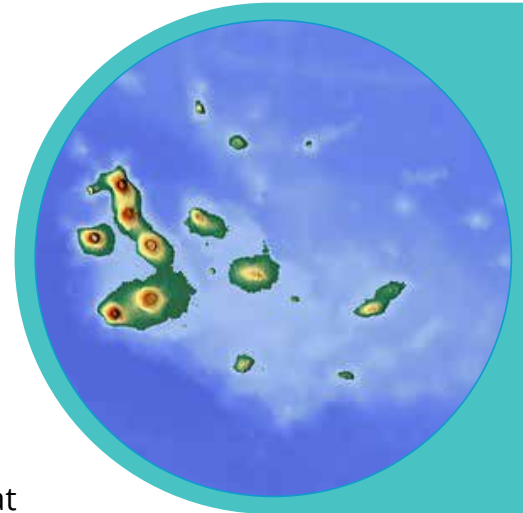
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Charles Darwin was a naturalist, or person who studies nature, who lived in England in the 1800s. Because of his work studying organisms on the Galapagos Islands, he is said to have developed and coined the term **natural selection**.

The theory of natural selection is that genetic changes happen over time in a species and allow offspring to survive better in their environment. A **theory** is an idea used to explain something that occurs in nature. For a theory to be accepted within the scientific community, a hypothesis will have been tested repeatedly with a well-supported conclusion.

Natural selection is widely accepted and observable in adaptations of species. However, some scientists argue that it is the cause of all living organisms evolving from one. Because scientists have not been able to observe such events in real time, this theory is still heavily disputed. The following activities and information focus on the observable phenomenon of natural selection but do not cover the origins of species.

As a result of natural selection, **heritable traits** best suited for survival become more prevalent within a population. And, those best suited for survival are more likely to survive and reproduce. Heritable traits are described as genetic characteristics passed on from their parents.





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