



SEATTLE
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SCHOOLS

Science Learning Packet

Grade 8:

Evolutionary History, Lesson 7

science learning activities for SPS students during the COVID-19 school closure.

Seattle Public Schools is committed to making its online information accessible and usable to all people, regardless of ability or technology. Meeting web accessibility guidelines and standards is an ongoing process that we are consistently working to improve.

While Seattle Public Schools endeavors to only post documents optimized for accessibility, due to the nature and complexity of some documents, an accessible version of the document may not be available. In these limited circumstances, the District will provide equally effective alternate access.

Due to the COVID-19 closure, teachers were asked to provide packets of home activities. This is not intended to take the place of regular classroom instruction but will help supplement student learning and provide opportunities for student learning while they are absent from school. Assignments are not required or graded. Because of the unprecedented nature of this health crisis and the District's swift closure, some home activities may not be accessible.

If you have difficulty accessing the material or have any questions, please contact your student's teacher.



Grade 8 Science

Evolutionary History Unit Lesson 7

Instructional Materials for Amplify Chapter 2, Lesson 2.3

AmplifyScience



If you have access to an internet device at home, you can also watch the accompanying lesson video at <https://youtu.be/zEKNJSGNsFM>

Student Name: _____

School: _____

Grade Level: _____

Science Teacher: _____

Hello Families,

We hope you and your family are well and safe during this time. During this unprecedented out-of-school time, the SPS middle school science team will be offering instructional opportunities for students that align with the district's adopted middle school science instructional materials.

This investigation packet is part of a series of district-aligned lessons for middle school **science developed by AmplifyScience** and adopted by SPS in 2019. While Amplify Science lessons are designed to be done in the classroom with peers, there are some activities that students can complete at home. In this packet you will find activities to accompany lessons in the unit. **Accompanying lesson videos are posted on the [SPS Science webpage](#) under their corresponding grade level.** These lesson videos, developed in collaboration between SPS teachers, Denver Public Schools teachers, and Amplify Science, feature teachers going through the information in the lessons. **The work in this packet is intended to be completed alongside the viewing of the video of the corresponding videos. To find the correct lesson videos go to [SPS Science webpage](#), scroll to your grade level, find the unit you are looking for, and select the video that matches the lesson you are completing that day.**

For students who have access to the internet and the following devices and browsers **may wish to log-in to their AmplifyScience account from home are welcome to do so.** Chrome and Safari are the recommended browsers to use for full functionality of the Amplify digital tools and features.

Sincerely,

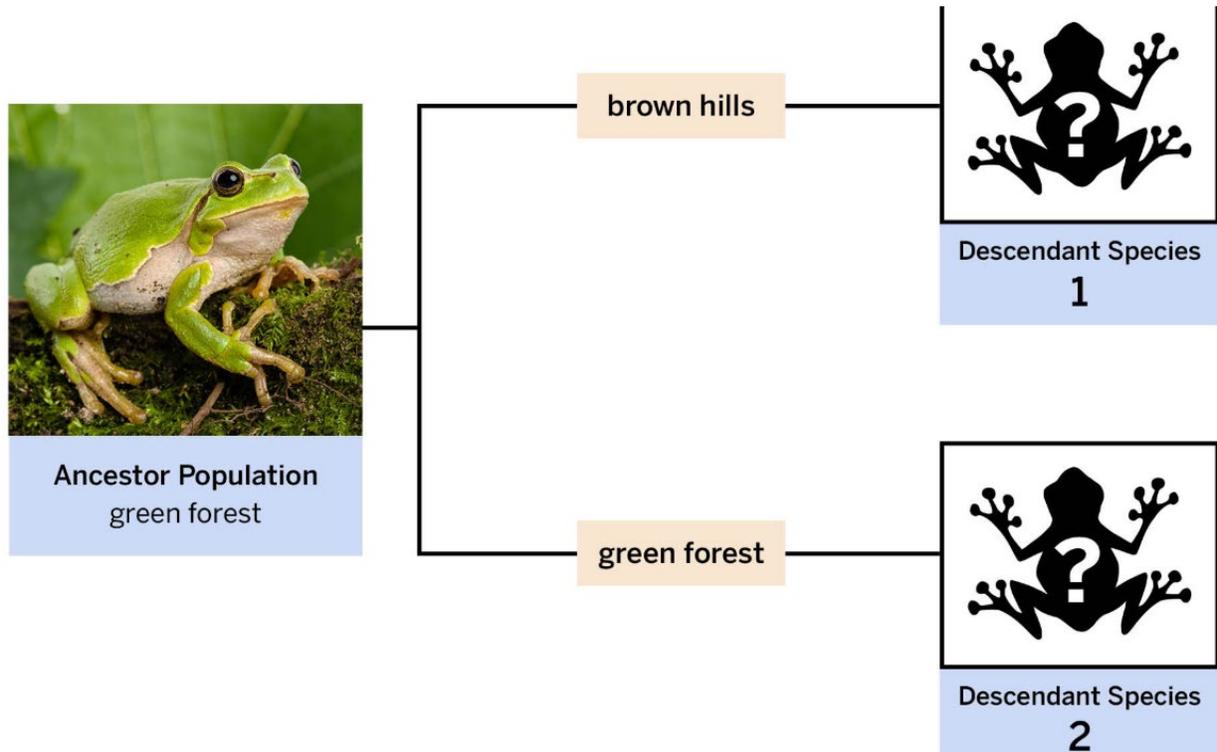
The Seattle Public Schools Science Department



Unit Question: Why do species, both living and extinct, share similarities and have differences?

Chapter 2: Investigating Body Structure Differences

Imagine a population of frogs that live in a forest. The frogs have a green coloring on top that helps them blend in so they are not seen by predators. Most of the frogs stayed in the forest, but some moved to the hills above the forest. The hills are drier with brown grass and soil.



1. Which population of frogs is more likely to have more changes over many generations? Why?

Ostrilope populations in changing environments

- ✓ Ostrilopes with longer necks can reach and eat taller thornpalms.
- ✓ Ostrilopes with stronger jaws can eat thornpalms with larger thorns.

Part 1 - Predictions:

Environment A has taller thornpalms.

2. Will this ostrilope population change? If so, how?

Environment B has thornpalms with larger thorns.

3. Will this ostrilope population change? If so, how?

An ostrilope common ancestor population is split into two different environments.



Environment A
taller thornpalms



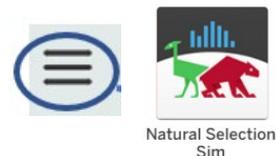
Environment B
thornpalms with larger thorns

Part 2 – Test in the Natural Selection SIM:

*If you have access to a device, please go to the “Natural Selection” SIM.

*Select the “from one species to two” mode from the top left menu in the SIM.

*Follow instructions for both partners below.

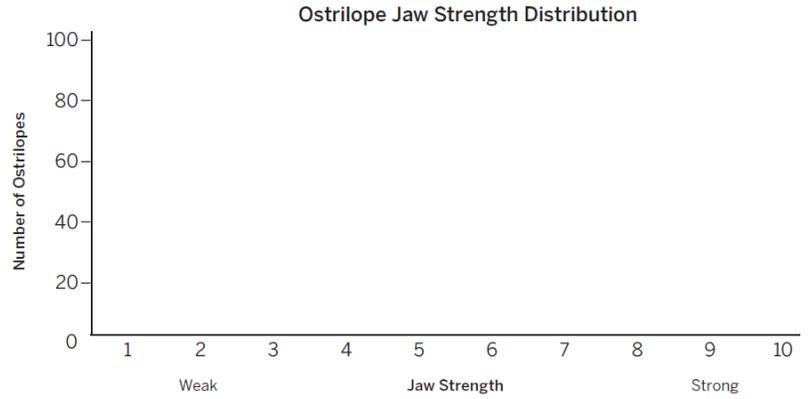
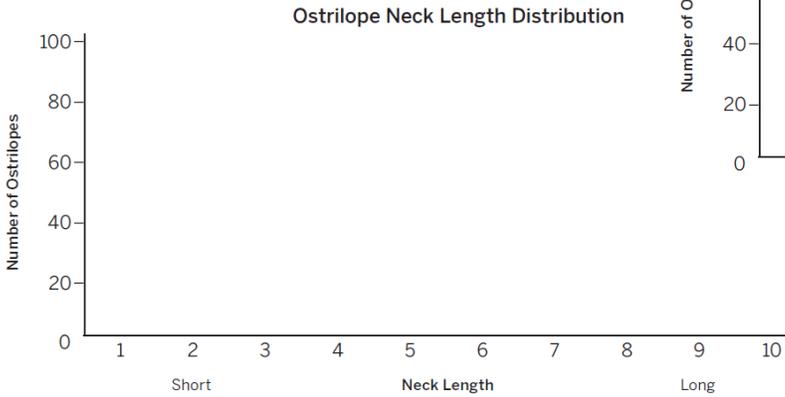


Pair A: Ostrilopes and Taller Thornpalms	Pair B: Ostrilopes and Thornpalms with Larger Thorns
<ul style="list-style-type: none"> Open the <i>Natural Selection Simulation</i> and use the menu in the upper left corner to open the From One Species to Two mode. Press REBUILD if you or your groupmates have made any previous changes to this mode on this device. Press the thornpalm icon. <ul style="list-style-type: none"> Change the most common thornpalm height to 4. Change the thornpalm height variation to Medium. Press RUN and observe changes to Population A over 50 generations. Tip: increase the speed to 4x. Press ANALYZE to closely observe the ostrilope histograms. 	<ul style="list-style-type: none"> Open the <i>Natural Selection Simulation</i> and use the menu in the upper left corner to open the From One Species to Two mode. Press REBUILD if you or your groupmates have made any previous changes to this mode on this device. Press the thornpalm icon. <ul style="list-style-type: none"> Change the most common thornpalm thorn size to 4. Change the thornpalm thorn size variation to Medium. Press RUN and observe changes to Population B over 50 generations. Tip: increase the speed to 4x. Press ANALYZE to closely observe the ostrilope histograms.

4. If you have access to the SIM, draw your results below.

Draw your histogram results for B (Larger Thorns)

Draw your histogram results for A (Taller Palmthorns)

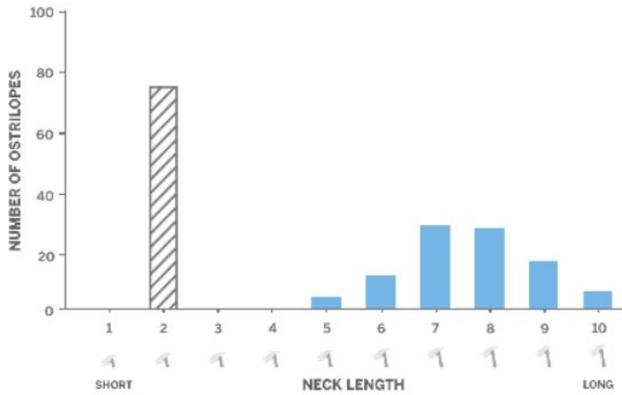


histograms below (before answering the next questions).

*If you don't have access to the SIM, look at the

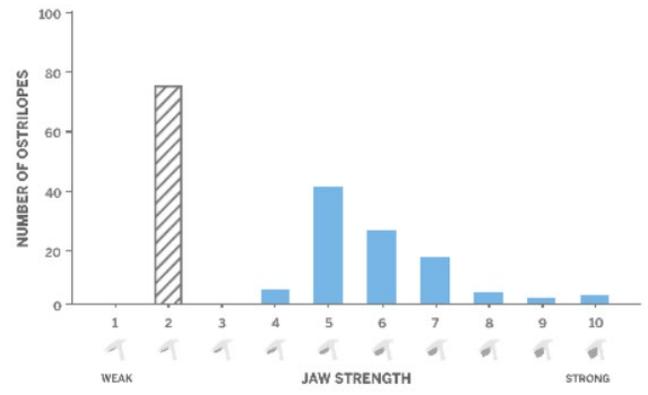
Group A: Taller Thornpalms

Ostrilope neck length after 50 generations.



Group B: Thornpalms with larger thorns

Ostrilope jaw strength after 50 generations.



4. What **difference in body structures** do you notice between generation 1 (▨) and generation 50 (■) for each population?

Population

A: _____

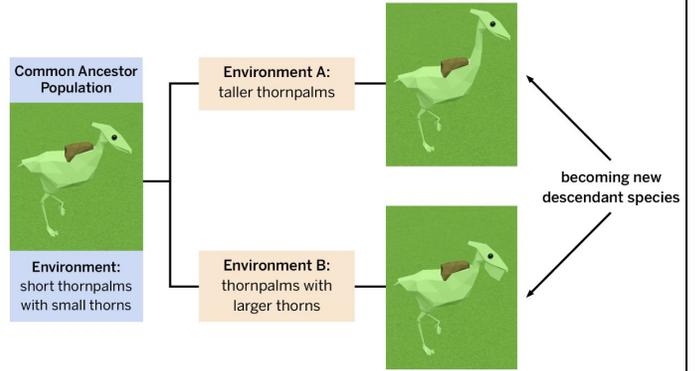
Population

B: _____

5. Explain: How does an ancestor population evolve into descendant species with differences in their shared structures? Use evidence from the Sim to support your explanation.

Key Concepts

1. Species inherit their body structures from their ancestor populations.
2. Body structures that are shared between two species are evidence that these two species inherited the shared structures from a common ancestor population.
3. In populations separated into different environments, natural selection causes different changes to happen to each population. This causes descendant species to end up with differences in their shared structures.
4. When the environments is mostly the same over time, body structures stay stable. When environment changes over time, body structures may change due to natural selection.



Checking for Understanding (Vocabulary Terms on the next page if needed)

Please do your best to answer the following question using words and/or labeled drawings to explain your thinking:
How does an ancestor population evolve into descendant species with differences in their shared structures?

Vocabulary

ancestor: a related organism from a previous generation

ancestro: un organismo emparentado de una generación anterior

body structure: a part of an organism (for example, one or more bones)

estructura corporal: una parte de un organismo (por ejemplo, uno o más huesos)

common ancestor population: an older population from which two or more newer species descended

población ancestral común: una población más antigua de la cual descendieron dos o más especies nuevas

descendant species: a more recent species that evolved from an ancestor population

especie descendiente: una especie más reciente que evolucionó de una población ancestral evolution

shared structure: a body structure in two or more species that features the same parts (for example, the same bones)

estructura compartida: una estructura corporal en dos o más especies que tiene las mismas partes (por ejemplo, los mismos huesos)

speciation: the process by which one population evolves into two or more different species

especiación: el proceso por medio del cual una población evoluciona a dos o más especies diferentes

species: a group of organisms of the same kind (in one or more populations) that do not reproduce with organisms from any other group

especie: un grupo de organismos del mismo tipo (que viven en una o más poblaciones) que no se reproducen con organismos de ningún otro grupo

stability: when something stays mostly the same over time

estabilidad: cuando algo permanece más o menos igual a lo largo del tiempo
a related organism from a previous generation