

Swallow Wing Phenomena - Part 1

Name(s) _____

You may work with up to two additional students to complete it. This activity will let you think like a scientist using many of the key concepts you have learned this year. **Your observations, use of cross-cutting concepts, and questions should show thought and effort**



Phenomenon: Cliff swallow's (birds) wings have gotten shorter as they more commonly nest under overpasses instead of their traditional cliffside nests.

[Video of swallows flying under a bridge](#)

[Video of swallows nesting in cliffs](#)

*“When the researchers analyzed the average wing length of the living birds in the population, they discovered that it had become shorter over time, from 111 millimeters in 1982 to the 106 millimeter average in 2012. The data suggested to the Browns that roadkill deaths were a major force driving this selection. Birds with longer wings would be more likely to be killed by vehicles and less likely to reproduce, the team reports online today in *Current Biology*.”*

PART 1 (5 Points) - Observations: Observations are information that you can get from using any of your senses. They are statements of fact. What observations can you make from looking at these pictures or videos? (Make at least three good observations. You may notice more - if so feel free to add more numbers!)

1.

2.

3.

PART 2 (5 Points) Earlier this marking period, you learned about the **Crosscutting Concepts**. These are concepts that are frequently found in all areas of science. The crosscutting concepts are: **1. Patterns, 2. Cause and effect. 3. Scale, proportion, and quantity 4. Systems and system models 5. Energy and matter 6. Structure and function 7. Stability and change.** If you would like to review the CrossCutting Concepts presentations as a whole before doing this step of the activity, here are the links to the complete presentations: [Part 1](#); [Part 2](#). The links to the individual slides for each CrossCutting Concept are also listed next to the Concepts below.

Look carefully and thoughtfully at the above pictures again. Now look at the list of Crosscutting Concepts below. For as many of the concepts as you can (**at least 3!**), explain where or how you can see the Crosscutting Concepts represented in the pictures and why you believe this. (The links take you to the specific slides from the presentation about that Concept...you can click on each link to review a concept as needed.)

1. **Patterns.** (Is there anything that is **repeating or anything that you can predict** from the pictures?)([LINK](#))
2. **Cause and Effect.** (What **caused** what you are seeing in the pictures?) ([LINK](#))
3. **Scale, Proportion, and Quantity.** (Are there things **too small to see, too large to see, or happening outside of the picture** that is important?) ([LINK](#))

4. **Systems and Systems Models.** (Are there things that are **working together** to make something happen?) ([LINK](#))
5. **Energy and Matter.** (Is there **energy** in the picture? Is there **matter changing** in the picture?) ([LINK](#))
6. **Structure and Function.** (Does something **look like it does because of what it does**?) ([LINK](#))
7. **Stability and Change.** (Considering events can happen extremely quickly or slowly, can you see any **changes that must have happened** before these pictures or **changes that you think will happen**.) ([LINK](#))

PART 3 (5 Points) Now that you have made observations and determined what Crosscutting Concepts are evident from the Phenomenon pictures above, think of three questions that would require scientific effort, thought and research that could be answered from the pictures above. (Note - It is very possible that you will be researching one of these questions next week to determine an answer to your or another classmate's question!)

With each of your questions, include a link to a website that would at least partially answer your question.

Your Question 1 -

Your Question 2 -

Your Question 3 -

Teacher stuff:

LS4.B: Natural Selection

- Natural selection leads to the predominance of certain traits in a population, and the suppression of others. (MS-LS4-4)

LS4.C: Adaptation

- Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)

Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. [Clarification Statement: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures.]

Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. [Clarification Statement: Emphasis is on using simple probability statements and proportional reasoning to construct explanations.]