Teacher's Key: Bat vs. Bird Wings

Level 1

OVERVIEW

Students compare and contrast an "external part" of bats and birds, the wing.

Why It's Easy for You

- Worksheets are ready to print
- No supplies needed besides writing materials

Conditions and Challenges

- This is not an introductory activity, make sure students have had instruction on bats, birds, and/or adaptations

Before You Begin

- Ensure students have some familiarity with bats.

Suggestion

- Prior to the lesson, read "Stellaluna" - students can compare the bats and birds
- Post-lesson, study the Robo-bat on the Bat Powerpoint from Science Delivered

NGSS alignment

1-LS1-1 Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs

Disciplinary Core Ideas

- Animals have differences in external parts
- Different species of animals can have external parts that have some similarities and some differences
- Specifically, birds and bats both have wings that allow them to fly. There are similarities between the two species' wings, and differences.

Crosscutting Concepts

- Patterns: One obvious pattern is virtually all animals that can fly have wings. Can students name other animals that can fly that have wings? What about variations to the pattern - animals with wings that cannot fly?
- Structure and Function: The structure of the wings allows flying. Wings are shaped to catch air and keep animals in the air. What human-made structures have wings that can fly? (e.g . airplanes)
- Scale, proportion, and quantity: Both bats and birds can range in size considerably, and animals at many different sizes can fly. Does the size of the wing compared to the body matter? (Yes! Wings must be a certain size compared to the body to lift up an animal).

Scientific Practices

- Analyzing and Interpreting Data: Students are presented with data information in the form of real pictures and wing-skeletal models. They then must make comparisons and analyze what they see.

Instructions

Have a class discussion about animals that can fly. What do they use to fly? (Wings) Are all animal wings the same? Show the class the pictures of the wings on the handout. Are the *structures* of wings the same? Point out the bones. Are the bones the same? Talk about *structure* and *function* (hint this is a cross cutting concept). The structure of wings helps animals fly. What other animals can fly?

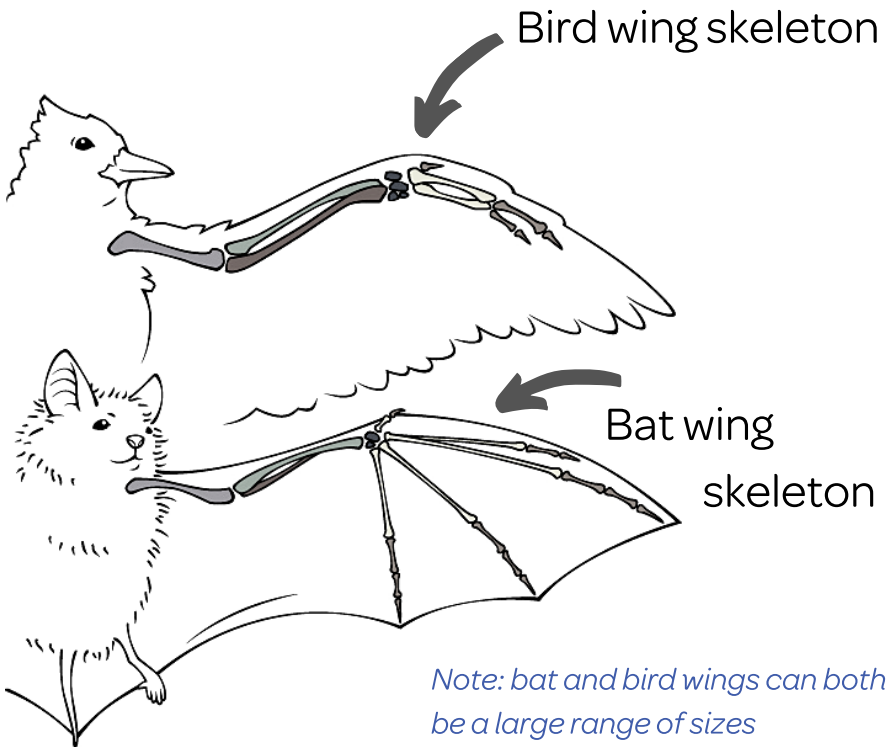
Note: This activity will help students understand the "Robo-bat," (see link in the bat Powerpoint). The Robo-bat videos talk about how bats fly differently than birds and how humans are trying to mimic the structure of bat wings.

BAT WINGS VS. BIRD WINGS

What is similar and different between a bat wing and a bird wing?

Sooty Tern (a sea bird)

"Big-eared-townsend bat"



Note: bat and bird wings can both be a large range of sizes

Write 2+ things that are SIMILAR between bat and bird wings

Possible answers: 1.Both have bones 2. Shape is similar

3. Wings are off the side of the body (position on body is generally similar)

4. Wingspan is relatively long on both

Write 2+ things that are DIFFERENT between bat and bird wings

Possible answers: 1. Bone placement 2. Feathers on bird-wing vs. thin skin on bat-wing

3. Wings are in a position on bat that the bird can't obtain (i.e. up and high above head)

4. Part of bat leg is connected to wing, unlike birds

5. Different colors (colors won't affect movement though and will also depend on type of bird and bat)

6. Bat finger-bones are longer than the bird wing's finger-bones are