

BUILD A BAT

KEY UNDERSTANDING:

Bats are amazingly diverse, with adaptations that suit them to their specific environments and food web niche.

NGSS CONNECTION:

MS-PS2-1, MS-LS1-4, MS-LS1-5, MS-LS2-1, MS-LS2-2, MS-LS2-4, MS-LS4-2

**MATERIALS:**

- Printouts of bat features pages
- Scissors
- Tape/Glue
- Drawing paper and implements

Summary

Students select from a variety of bat features to create a 'Franken-bat', then learn how each feature helps bats survive in a particular environment. Students then build a habitat in which their new Franken-bat can thrive.

Setup

Tables and chairs for group as needed

Script/Content

Adaptation: a change or the process of change by which an organism or species becomes better suited to its environment

Anyone ever Build a Bear? Today we're going to Build a Bat! There are over 1400 bat species (or types) living in almost every environment in the world, and you're going to add to that number by building your own Franken-bat today.

Working in groups of 3, choose one of each kind of feature for your bat and assemble it.

- Wing types: Long, narrow wings vs. short, broad wings
- Senses: Large eyes and small ears vs. small eyes and large ears
- Claw types: Small feet/claws vs. large feet/claws
- Tail: Small tail membrane vs. large tail membrane
- Nose: Nose leaf, short nose, long nose, and snout nose
- Fur type: furry vs. smooth

Allow 10 minutes for students to select and assemble their Franken-bats.

Now that we're done, let's see what your bats look like! Awesome! Next, we're going to figure out what each of these adaptations means for your bat. As we find out what each adaptation means for your bat, be sure to write it down.

Review feature adaptation content below

Wing types:

- Long, narrow wings - adapted to moving quickly in open space or over long distances
- Short, broad wings - adapted for hovering close to the ground, darting in and out of dense branches, or carrying heavy fruit or prey

Senses:

- Large eyes and small ears - Depend more on vision to orient themselves during flight and to find food. These bats primarily eat fruit, flowers, and leaves. These bats don't use echolocation.
- Small eyes and large ears - These bats depend more on sound/echolocation to find and eat prey items. These bats primarily eat insects, though some eat fruit, nectar and other vertebrates

Claw types:

- Small feet/claws - good for crawling around on a wide range of surfaces, especially rocks and small crevices
- Large feet/claws - adapted for catching larger prey, like fish and small mammals

Tail:

- Small tail membrane - good for bats that roost in trees or places where a long tail membrane could get in the way
- Large tail membrane - adapted to move direction quickly and for helping to catch insects in the air.

Nose:

- Nose leaf - adapted to support and direct echolocation produced from the nose
- Short nose - adapted to have a strong, firm bite for eating hard fruit or insects

- Long nose - adapted to drinking nectar
- Snout nose - a generalist who can drink nectar, eat soft fruits and even insects.

Fur type:

- Furry - adapted for living in cooler habitats, camouflage against bark or tree leaves or because they are attracted to furry mates
- Smooth - help bats fly fast (aerodynamics), fit into tight spaces or because they are attracted to smooth-furred mates.

Your task now is to create a habitat in which your bat can thrive. If you have a feature that's really tripping you up, you can swap ONE feature out.

Allow 10 minutes for students to draw OR describe their habitats.

Awesome! Now please work together to answer these questions:

- What were your bats' key adaptations?
- What was your biggest challenge in creating the habitat?
- Do you think this is a naturally occurring habitat on Earth?

Allow 10 minutes for groups to present their environments

While bats have adapted to live in habitats all over the world, because they can be so specialized to their environments, it's crucial that their habitats be protected in order for them to survive.

Many bat habitats around the world are being destroyed due to clearing of forests and trees, disturbance of caves, and loss of wetlands. Bat conservationists are people who work to protect and restore bats and their habitats so that bats can continue to live and thrive.

Sources:

Discover Bats! With Merlin Tuttle and Bat Conservation International, Ch. 6. Investigating Bat Adaptations

Discover Bats! With Merlin Tuttle and Bat Conservation International, Ch. 13., Studying Neighborhood Bats

Academic Sources (just to have in your back pocket)

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