

Name that Bat!

Guiding Question: How can I identify different bat species in their habitats?

Field guides are essential tools for field ecologists as they study plants and wildlife. With proper guidance, even the youngest students can learn to use a simple field guide to identify different animals. This activity provides teachers with a way to introduce their students to field guides early, simply, and with life-size bats!

Science Process Skills: Classification, Observation

Targeted Grade Levels: K–2

This article relates to the following *National Science Education Standards (NRC 1996)*:

Grades K–8: Content Standard A: Abilities necessary to do scientific inquiry

- Understanding about scientific inquiry
- Employ simple equipment and tools to gather data and extend the senses.

Grades K–4: Content Standard C: Life Science

- The characteristics of organisms
- Organisms and environments

Materials:

To make bats (1 per group of 4 students):

- Brown paper
- Paint and brushes
- Craft sticks (1 box)
- Toothpicks (1 box)
- Wax paper (1 roll)
- Staples (to staple field guides)
- Glue

(All of these items were found at the local discount store)

- *Hello, Bumblebee Bat* by Darrin P. Lunde

- Bat information sheets (1 per group of 4 students)

This is a sheet with information about what the bats eat and where they live. This is provided with the bat when the bats are initially handed out. These sheets were made using Microsoft PowerPoint. These sheets will be stapled together to create a bat field guide, which is described below.

- Bat Field Guides

This is a booklet with pages for each of the bats. The same pictures from the information sheets are used. These were made using Microsoft PowerPoint (see Figure 3).

- Science journals and pencils

Prior to Lesson:

1. The teacher will want to make the bats for students to use (or have students create them to use during the lesson). Using the picture of the bat skeleton (Figure 2) as a guide, the teacher should lay out craft sticks or toothpicks (as directed) to make the shape of the bat wing. The following bats will be used for this activity:

Little Brown Flying Fox – 36 inch wingspan – Craft sticks

Bumblebee Bat – 6 inch wingspan – Toothpicks

Hammerhead bat – 38 inch wingspan – Craft sticks

Spotted Bat – 13 inch wingspan – Craft sticks

2. Once you have the craft sticks laid out, put glue on each of the craft sticks and lay a piece of wax paper over the sticks. Wait for that side to dry (approximately 3 minutes) and turn over. Put another piece of wax paper on the next side. Let dry and then cut to the shape of a bat wing. Be sure to use glue, rather than staples, to prevent accidental cuts and scratches as students explore and handle the bats.

3. Use brown paper to shape the body and head of the bats (see Figures A–C). Paint them the color of the bat and tape the wings onto the side. When making the feet remember to cut toes and remember to make ears on the heads!

Figure A. Bumblebee Bat being made.



Figure B. Example of finished bat.



Figure C. Example of finished bumblebee bat.



LESSON PLAN

How to identify an animal

The next important step in identifying an animal is having the correct field guide. When introducing a new type of literature to children it is important to remind them that literature can be as different as animals. Introduce the literature by its intent and explain to the children that you will need different field guides for different animals.

Of course, being able to correctly read the field guide is important too. Children who have never used this type of material before may not know how to correctly read a field guide (if indeed your students are readers at all yet). Knowing where to look and what to look for are important guiding factors in using a field guide correctly. Modeling is a very important step in making sure that your students can successfully use a field guide.

I made my field guides using Microsoft PowerPoint. The field guides included one page about each of the bats. The pages had a photo of the bat, a picture of the habitat, and a picture of the food that the bat eats. Each picture was labeled to help beginning readers. I found all of the photos online through the use of photo sharing websites (See Figure 3 for the field guide made using PowerPoint).

Engage

Begin engaging the students' interest by reading *Hello, Bumblebee Bat* by Darrin P. Lunde. Tell the students that today they are going to be scientists that have found bats. Their job is to figure out what kind of bats they have found. Introduce the field guide as the tool/resource that the students will use to figure out what kind of bat they have found. Tell the students that before they can use the field guide they have to learn about their bats.

Explore:

1. Give each of the student groups a pre-made bat and a "bat information sheet." The bat information sheet is simply a copy of the field guide page that corresponds with their bat. Let the kids look at the bats and the sheets. Encourage the students to observe key characteristics of each bat, including wing size, ear and head size, and body size. Encourage the kids to imagine the bat eating the food shown on the information sheet and living in the environment shown on the bat information sheet.
2. Once the students have had time to explore the bats give a field guide (see Figure 3) to each group. Model for the students how to read a field guide, show the students an example of you matching the pictures from the information sheet to the pictures and words in the field guide. For example, hold up a bat and demonstrate for the students how to match the bat's head, ear, and nose shape to the photographs. Then, students might compare the color of the bat to the color on the page. Finally, once students have correctly identified the bat by physical characteristics, they can identify the food source and habitat of the bat species.
3. Give students time to identify which bat they have using the field guide. Have students record their bat species, what the bat eats, and where it lives in their science journals. Students may also choose to draw pictures and label the pictures instead (see Figure D).

Figure D. Sample of student journal page.

Bat's Name:	What it eats:	Color:	Where it lives:

Explain:

Circulate through each of the groups, checking on student progress to assess their abilities to use the field guides. Ask students to share with you the evidence recorded in their science journals, checking for accuracy.

The teacher may also want to consider showing students video footage of bats in their habitats so that students can see how the animals interact within the environment. Students may watch the videos and make note of where the bat lives (for example, at the top of the tree, or the bottom? In a hole in the tree or hanging from a branch?).

Through use of the pictorial field guides and by watching video of bats in their natural environments, children may notice that bats hang upside down. The teacher can share that bats do this for several reasons: (1) hanging upside serves as a camouflage tool; (2) hanging upside allows a bat to immediately take off and find food and safety quickly; (3) and hanging upside allows the bat to conserve energy it would use trying to stay upright on such small legs.

Elaborate:

1. Once students have shown their abilities to identify one bat species, have the groups rotate through stations so that they can identify each of the bats.
2. After students have identified each of the bat species, engage the class in a discussion about the similarities and differences in each bat species—what did the bats have in common? What was different?

Evaluate:

This lesson provides several opportunities for both formative and summative assessment. The teacher may make information observations of student field guide use as they practice identifying the bats. The teacher may ask students questions such as “How do you know that is a XXX bat?” to assess student understanding. The teacher may also use student journal entries to verify that they have correctly identified each bat species using the field guides. For example, students may write draw a picture of their bat and write two facts about the bat that they learned from using the field guide (see Figure 4). The teacher may use a rubric like the one in Table 3 to evaluate student work.

Final Thoughts:

Once all of your students have finished bring them back together and let them share their science journals with the class. Ask them to make connections between their writing and the activity. Ask the students what other animals or plants they might need to use a field guide to learn about. Make sure to review the ways and reasons of using a field guides with your class as a final wrap up. Leave the bats, information sheets, and field guides in the room so that interested students can further explore on their own.