Family Sense

Audience
Classroom setting but can be broken up into three shorter activities for event purposes. Appropriate for visitors aged 7 and up.

Goal
To learn how mother bats use their senses of hearing and smell to find their pups.

Objectives
Visitors will be able to simulate the ways a mother bat finds her pup and practice using the senses of hearing and smell.

Big Idea/Main Message
Bats have a unique method of finding their young even amongst hundreds of other bats.

Conservation Action/Behavior Addressed
Look, listen, and learn: educate yourself and your family about bats. Bats account for nearly 20% of all mammal species, and most are highly beneficial to people.

Background Information
Mother Mexican free-tailed bats find and nurse their own young, even in huge colonies where many millions of babies cluster at up to 500 individuals per square foot. Mothers and pups recognize each other's unique voices at least three feet away and move toward one other despite the incredible confusion of calls emanating from countless thousands of other bats. Multiple landings are typically required to find a pup, each bracketing its location in a manner suggesting that a mother is triangulating her pup's voice. Finding her young can take as little as 12 seconds to nearly 10 minutes. She most commonly feeds her pup before she goes out to feed and again when she returns in the morning.

Final recognition is by scent, though it remains to be discovered whether the scent is placed on the pup from glands on the mother's face, or whether each pup has its own unique odor. A successful reunion ends with a mother touching the top of her pup's head with her muzzle, apparently smelling and exchanging vocalizations with it. Such exchanges can last for a minute or more before the mother raises her folded wing and nudges the pup toward one of her breasts.

Materials Needed
- butcher paper
- cotton balls
- glue
- blindfolds for each bat (6)
- orange, mint, vanilla, banana, lemon, and coconut extract

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- stopwatch
- hole punch
- bat pattern
- yarn
- graph for recording

**Staff**
A minimum of one staff or volunteer to supervise in a classroom. For an event provide one volunteer for each procedure (3 total).

**Length of Activity**
Each procedure should last 10-20 minutes in a classroom. For an event conduct the procedures with individual families, each procedure lasting 3-5 minutes.

**Set up**
1. Cut a 1'x1' piece of butcher paper. Glue 500 cotton balls to this to demonstrate the density of bat babies in a nursery.
2. Cut out necklaces and add yarn. Place a few drops of extract on the adult and a random pup. Use a different extract for each pair. Allow to dry.
3. Talk about the characteristics of a bat nursery.
   - What might it feel like to live in a bat nursery?
   - How would a mother bat find her baby?

**Procedure**
A. Locating the pup using scent only.
   1. Explain to the students that you have put different scents on different necklaces. Discuss the importance of not discussing the smell of their necklace with any other student. Explain that the adult will be blindfolded and their job will be to find the pup who has the same scent. There is one pup matched to each adult.
   2. Separate the adults from the pups. Each pup will put on a necklace and stand in a line along one side of the room. Indicate to them the point at which the adult will be starting.
   3. The teacher will blindfold and take one adult to the starting line.
   4. The adult is released, noting the elapsed time until the pup is found. Record on chart column "By Scent Only." Repeat for each adult.

B. Locating the pup using scent and sound.
   1. Have students trade necklaces to have 6 different adults and pups.
   2. Pair up adults with their pups and let them arrange a special signal of clicks. Each of the other pups will figure out their own set of signals.
   3. Blindfold the adults one at a time and take them to the starting line. Mix up the pups.
   4. Have the pups quietly make their own clicks as the adult hunts. Time and record under "Scent and Sound."

C. Locating the pup by scent, sound and placement.
1. Trade necklaces again. Pair up with matched-scented pup and agree upon clicking signal.
2. Allow the adult to place the pup in position. All others can choose a spot in the nursery. Adults should return to the starting line and be blindfolded. At a given time, one adult may find their pup using all 3 senses while the pups emit their sounds.
3. Record the amount of time used:
   - Was it easy to find the baby using the sense of smell?
   - Which way did it seem easier to find the babies? Explain.
   - How important was it to know the placement...smell...sound of baby?
   - When we lose something, which of our senses helps us the most in finding the lost item?
   - Is it the same for the bat?

*Note – This activity was adapted from and used with permission of the Lubee Bat Conservancy