



# In The Caves Where We Live

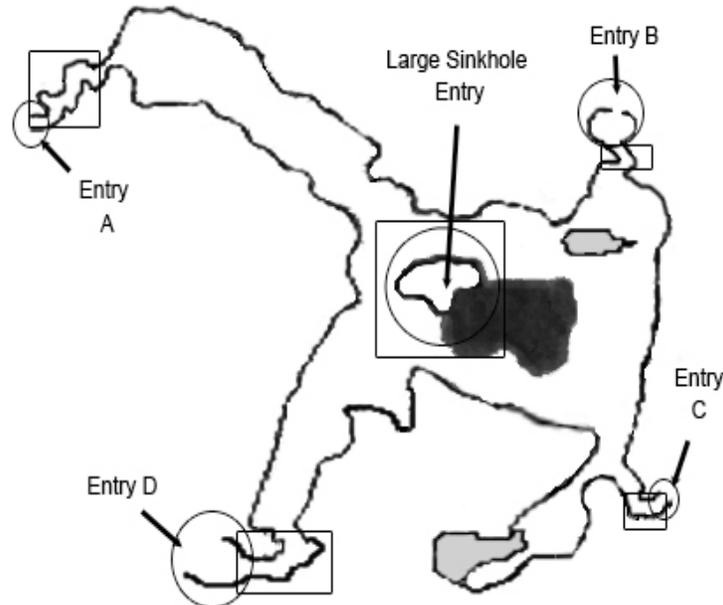
## *Cave Communities*

**Materials:** Cave Communities reading (pg. 5-3 and 5-4) ● Worksheet (pg. 5-5 and 5-6)

Students should read the descriptions of cave communities and answer the related questions.

Key:

1. Approximate locations of the Entry zones are indicated with ellipses, the Twilight zones are contained in rectangles. Everything else is the dark zone.



2. The cave community would be much more complex in the area where the bats roost. Decomposers would use bat guano as an energy source.
3. Since the colony is in the dark zone, some members of the community may be blind, white/pink or have long antennas.
4. Since the bats provided the energy source, following the cave-in, the terrestrial community would become less complex and might disappear.
5. The aquatic community may become less complex, but as long as resources continue to be brought in by the stream it will survive.



6. In what zone or zones would you find:
- a. Dark Salamanders – adults throughout the cave – juveniles in the water in the dark zone
  - b. Walking Ferns – mostly in the entry, very few in the twilight zone
  - c. Cave Crayfish – twilight zone
  - d. Nesting Birds – Entry and twilight zone
  - e. Pill Bugs—Entry and twilight zone





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## In The Caves Where We Live

Read the following descriptions of various cave communities and answer the questions on page 5-5 and 5-6.

You might be surprised by how much life is below the surface in a cave. Cave communities depend on energy brought in from the surface world. You can predict what kind of organisms will be in a community based up on where in the cave they live.

### Entry

Entries can be natural or man-made and vary in size. Cave entries can range in size from thin crevices in a rock face to caverns large enough to fit several vehicles. Sinkholes provide vertical entries into caves. The most diverse communities within a cave are found in large entries. If an entry is big enough then enough sunlight will reach within the cave to support plants. They are not specially adapted to cave life and green algae and woodland plants like mosses and ferns are most common.

These species are able to tolerate the low light levels that at the cave mouth.

Leaves and other plant litter blows in from plants outside the cave and support decomposers. Many of these decomposers are also found outside of caves, such as small millipedes, terrestrial isopods (also known as pill bugs or roly-polies), terrestrial snails, earthworms, cave crickets, and other insects. Several species of flies, gnats and midges feast on the organisms and waste found in the entry. Centipedes and a variety of salamander species hunt the decomposers and the flying insects and may venture outside the cave to pursue other meals.

Larger animals use the cave entries for shelter for themselves or their young. Frogs and snakes take advantage of the stable temperatures with in the cave for thermoregulation and hibernation in winter. Snakes may also use the cave entry to hunt birds and bats that nest or roost within the cave. Birds like the eastern phoebe use cave entries for nesting sites that are protected from the weather and wide temperature fluctuations. Several salamander species live in cave entries and forage both inside and out of the cave system.

### Twilight Zone

The twilight zone is a very small niche within a cave ecosystem. It begins within a few feet of small openings, but it may start farther into the cave if the opening is large and admits a lot of light. Once in the twilight zone turns quickly block the light from reaching into the cave. The twilight zone is only that region that gets some natural light. Typically, the animals found in the entry are also found in the twilight zone. A few plant and algae species will gather enough light to survive in this area. In a few caves, parasitic plants can be found growing





Name \_\_\_\_\_

on the roots of surface trees that penetrate into the cave's twilight zone,

### **Dark Zone**

The dark zone of a cave begins where there is no natural light. Residents in the dark zones depend on resources that brought into the cave from the outside world. Some resources are brought in on the wings of bats that leave the cave to forage and return to deposit guano on the cave floor. Streams that run along the surface before entering the cave also bring detritus and organisms from the outside. Some of the organisms that live in the dark zone are specially adapted to cave life and would not survive in the outside world. Terrestrial communities in the dark zone often depend on bats for food and communities with bat residents are more complex and larger than those without. Some complex cave ecosystems can support centipedes large enough to catch and eat bats. Aquatic systems with ties to the outside have juvenile salamanders, aquatic isopods, Planarians (flatworms), cave crayfish, amphipods and several species of fish.

Creatures that spend their entire lives in the dark zone look different from their relatives on the surface. They are often blind and their skin may be pink, white or almost clear. Other sensory systems are better developed, such as longer antennae or better hearing. Their metabolisms are often very slow as an adaptation to living in nutrient poor environments.



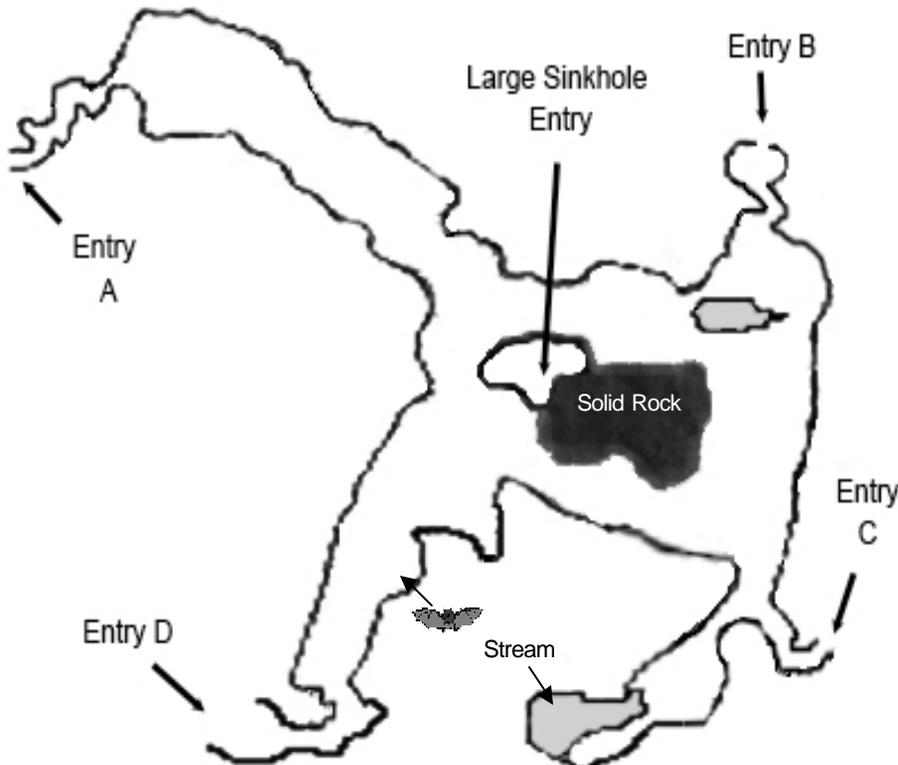


Name \_\_\_\_\_

## In The Caves Where We Live

Answer the following questions after reading about cave communities on pages 5-3 and 5-4.

1. On the diagram, mark the entry, twilight and dark zones for each of the five entries.



2. If a large colony of bats roosts in the cave during the summer. What affect would it have on the cave community? \_\_\_\_\_  
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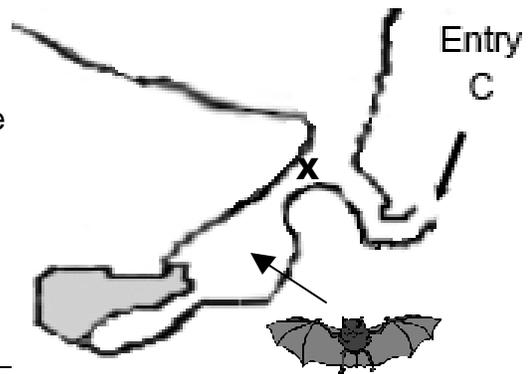
3. The location of the colony is marked with a bat in the diagram above. What is one characteristic of an organism you'd expect to find there?  
\_\_\_\_\_





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4. Another bat colony roosts in the area of the cave shown to the right. Passage "X" collapses while the bats are absent from the cave.



What happens to the terrestrial cave community?

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5. What happens to the aquatic community in the stream?

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6. In what zone or zones would you find:

- a. Dark Salamanders \_\_\_\_\_
- b. Walking Ferns \_\_\_\_\_
- c. Cave Crayfish \_\_\_\_\_
- d. Nesting Birds \_\_\_\_\_
- e. Pill Bugs \_\_\_\_\_

