

# OZARK ADVENTURE

Sponsored by Fantastic Caverns Science Research Program

## Bats Need Clean Water Too!

by Cullen Geiselman, Bat Conservation International

How are mammals which spend their nights flying through the air and their days sleeping in caves affected by water pollution? Like other animals, bats must drink water every night. However, they have the added challenge of drinking "on the wing" (while in flight). Bats can become sick or die if they drink water that has been contaminated by pesticide or fertilizer run-off from farms, golf courses and lawns. Since most bats cover large distances in a night, it is often hard to determine exactly where poisoned bats drank from polluted water sources.

The Ozarks are home to fifteen species of bats, which are all insectivorous (in-sec-tiv'ô-rous), meaning that they eat insects. Some of their favorite snacks are moths, beetles, mayflies, and mosquitoes. Many of these insects hatch out



Townsend's big-eared bat drinking in flight. (*Corynorhinus townsendii*)



Eastern pipistrelle bat hibernating. (*Pipistrellus subflavus*)

of water. Run-off containing pesticides, fertilizers and other pollutants can change the aquatic habitat so that the numbers and types of insects become very low, leaving bats hungry. When situations like this occur, many bats will be forced to move out of an area because there is not enough for them to eat every night. In order to protect water resources for bats, people should consider using fewer chemicals and maintaining trees and other ground cover, especially in surrounding streams, rivers, and lakes, so that dirt does not erode into our waterways.

Farmers are learning that bats can be good neighbors. Farmers want to decrease insect pests on their crops and

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# Cave W.I.N.G.S.

by Julianne Robinett and Leigh Wickell



*Fantastic Cavern Trip article.*

The Springfield (Mo.) W.I.N.G.S. middle-school students had the opportunity to experience the simple beauty and tranquility of a field trip to Fantastic Caverns. For those of us who had visited the Caverns previously, it was another chance to see the magnificent splendor of the huge caverns and sweeping formations. For those who had not visited the cave before, it was an opportunity to fully experience it.

While participating in the Adventure Tour, we especially enjoyed the "cave painting" and experimenting with the same tools as the Native Americans used to make fire. But it is the cave's exquisite presence and history that stands out most prominently in our minds. It makes us want to preserve the awesome beauty for generations to come.

Contributing writers Robinett and Wickell are WINGS students at the Phelps Center for the Gifted in Springfield, Mo.

WINGS = Working with the Individual Needs of Gifted Students

## Keep Us Posted

If your class or school has a science project that involves caves or springs, please tell us about it. You never know, we may feature your work in an upcoming issue of Ozark Adventure. You can reach us at: Fantastic Caverns Science Research Program, 4872 N. Farm Road 125, Springfield, MO 65803.

## Ancient Record

Early man's use of caves is well documented. Through archaeological studies we have been able to examine artifacts that give us clues about how these ancient people lived. From what they ate and wore to how they hunted, much of the information is found inside caves. The 2002 Adventure Tour will take a hands-on approach to finding these clues. Cave art and fire pit excavations provide information helpful in answering important questions. Visiting student groups even have the opportunity to learn how ancient man created magnificent cave paintings and made fire ... They'll try it for themselves!



Students are important to Fantastic Caverns. This issue of Ozark Adventure is sent to over 70,000 students here in the Ozarks. This is a big job for a small family business. Understanding caves and springs is important ... Taking care of them will keep the Ozarks a wonderful place to live and visit.

*This magazine sponsored by the Fantastic Caverns Science Research Program*



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bats want to eat up some of these same insects. It's a win-win solution! However, when farmers count on pesticides instead of bats, there can be problems. When bats eat insects that have been sprayed by pesticides it can cause them to become sick or die. Then, not only do bats lose, but so do farmers since fewer bats means more pests on the crops and more expensive applications of pesticides. Farmers can encourage bats to stay near their farms by building bat houses, keeping water resources clean, and reducing the use of pesticides. It is far better to work with nature than against it.

You can help keep water resources clean for bats, other wildlife, and humans by encouraging fewer pesticides, by disposing of garbage and other waste products in the appropriate places, and by teaching a friend or neighbor to do the same. After all, we all share water resources.

To learn more about bats, visit Bat Conservation International's web site at [www.batcon.org](http://www.batcon.org) or write to Bat Conservation International, Inc., P.O. Box 162603, Austin, TX 78716.

*Editor's Note: Cullen Geiselman is the Education Programs Assistant with Bat Conservation International in Austin, TX.*



*Bat Conservation International's monthly magazine.*

## BATS OF THE OZARKS

Rafinesque's big-eared bat (*Corynorhinus rafinesquii*)

\*Townsend's big-eared bat (*Corynorhinus townsendii*)

Big brown bat (*Eptesicus fuscus*)

Silver-haired bat (*Lasiorycteris noctivagans*)

Red bat (*Lasiurus borealis*)

Hoary bat (*Lasiurus cinereus*)

Seminole bat (*Lasiurus seminolus*)

Southeastern myotis (*Myotis austroriparius*)

\*Gray myotis (*Myotis grisescens*)

Small-footed myotis (*Myotis leibii*)

Little brown myotis (*Myotis lucifugus*)

Northern long-eared myotis (*Myotis septentrionalis*)

\*Indiana myotis (*Myotis sodalis*)

Evening bat (*Nycticeius humeralis*)

Eastern pipistrelle (*Pipistrellus subflavus*)

*\*an endangered species*



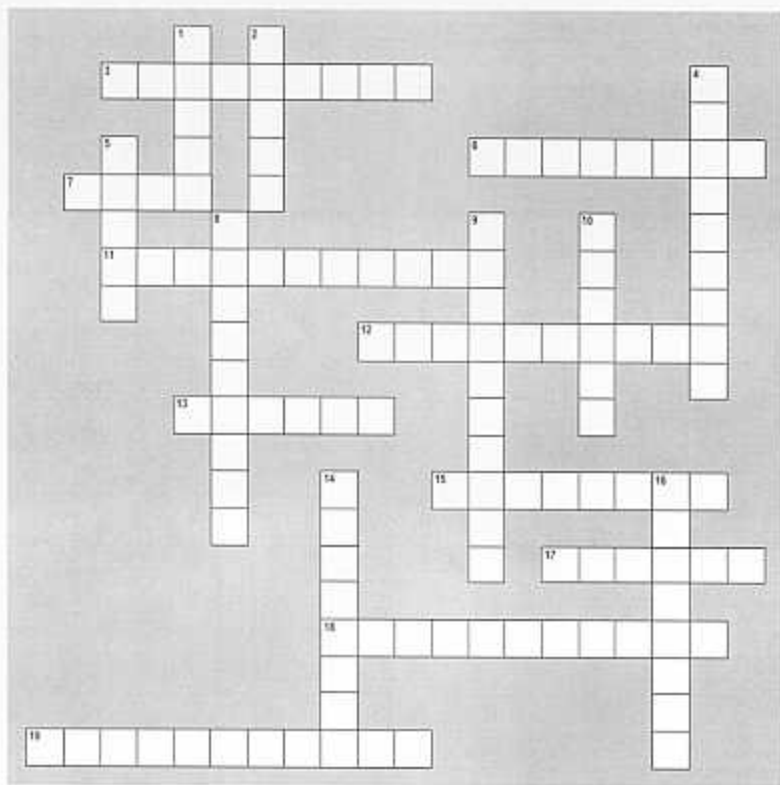
*Gray bat in flight echolocating. (Myotis grisescens)*

## 2001 Excellence In Science Award

The Fantastic Caverns Science Research Program 2001 Excellence In Science Award was presented to William Conway, a sixth grader at St. Agnes Middle School in Springfield, Mo. William's project "Woods Fork Creek Bacteria Peak" was entered in the 2001 Ozarks Regional Science & Engineering Fair. This award is funded in part by student recycling efforts at Fantastic Caverns.

**Congratulations William Conway!**

# FALL 2001 ADVENTURE PUZZLE



**ACROSS CLUES**

3. Studies natural history of Earth.
6. Much cave information is available on the \_\_\_\_\_.
7. \_\_\_\_\_ need clean water to drink.
11. Surroundings.
12. Cave formation growing up from the floor.
13. Cave formation reaching from ceiling to floor.
15. Known as "The Cave State".
17. Animal impression left in stone.
18. Famous museum located in Washington, DC.
19. Period before written history.

**DOWN CLUES**

1. Many kinds of \_\_\_\_\_ make up the Earth's crust.
2. Sometimes people find \_\_\_\_\_ of ancient animals.
4. Many unusual \_\_\_\_\_ used to live on the Earth.
5. You can find clues to history in most \_\_\_\_\_.
8. Pollution can enter the ground through \_\_\_\_\_.
9. Cave formation growing down from the ceiling.
10. \_\_\_\_\_ remains are sometimes preserved in clay.
14. The Missouri \_\_\_\_\_ Project is located in southeast Missouri.
15. Careful examination

**WORD LIST:**

**FALL 2001  
ADVENTURE PUZZLE**

- |             |             |
|-------------|-------------|
| ANIMAL      | INTERNET    |
| BATS        | MISSOURI    |
| BONES       | PREHISTORIC |
| CAVES       | RESEARCH    |
| COLUMN      | ROCKS       |
| CREATURES   | SINKHOLES   |
| DINOSAUR    | SMITHSONIAN |
| ENVIRONMENT | STALAGMITE  |
| FOSSIL      | STALACTITE  |
| GEOLOGIST   |             |