

Nuisance Bat Control



2006



Topics

- Basic bat ecology
- Common Arkansas bats
- Laws and regulations
- Safety
- Exclusion methods
- Certification

Basic bat biology

General information

- There are 16 species of bats in Arkansas.
- Bats are the only flying mammals.
- Bats can live for a long time—Little brown bats have been known to live as long as 34 years.
- All Arkansas bats are insect eaters.
 - About 70% of bats around the world eat insects, but some species do eat fruit and nectar.
 - There are even a few carnivorous species that eat fish, frogs, birds, and rodents. Of course, everyone's favorites are the 3 species of vampire bats found in Latin America.

Bats can help farmers

- One bat eats thousands of insects every night, including some of our most significant agricultural pests.
 - An average colony of 150 Big brown bats can eat 600,000 cucumber beetles, 335,000 stink bugs, and 158,000 leafhoppers each year.
 - The young form of the cucumber beetle, known as the corn rootworm, costs US farmers nearly 1 billion dollars in damage per year.

Echolocation

- Bats can see, but this isn't enough to allow them to easily fly at night.
- Echolocation is an additional sense available to bats. It is like sonar in that the bat produces a high-pitched sound and uses the echoes that bounce back to them to make a mental map of the area.
- Echolocation allows bats to know the location, size, and speed of their insect prey.

Habitat

- While many Arkansas bats do live in caves, most of them only stay there during the winter.
- During the summer, most of our bats live in hollow trees, underneath loose bark, or just hang out on the end of tree branches in a clump of leaves.
- A few species will live in buildings or underneath bridges.

Brazilian free-tailed bat



Often found in Arkansas buildings

Photo: David Saugey



Big brown bat
3-4" long



Eastern pipistrelle
Note the orange forearms



Rafinesque's big-eared bat
Often in abandoned buildings
Note the large ears (1" long)



Indiana bat

Ozark big-eared bat

Gray bat

**Our
endangered
bats**

Laws and Regulations

Laws and Regulations

- AGFC has authority over all wildlife, including bats, in the state.
- All bats are considered protected, nongame wildlife. It is illegal to kill them except that...
 - Bats doing damage to personal property (excluding endangered species) or that pose reasonable threat to persons may be killed.
 - However, this should only be done if there has been a potential rabies exposure and the bat needs to be submitted to the AR Department of Health.
 - Many people end up getting bit while trying to handle or kill bats, so only do it if absolutely necessary.

Laws and Regulations (continued)

- It is illegal to kill bats with chemicals or poisons.
- It is illegal to possess bats except that...
 - nuisance bats may be trapped and released outside city limits within 24 hours.
- There are 3 endangered bats in Arkansas.
 - Illegal to import, sell, purchases, possess, shoot, kill, injure, trap, net, snare, spear, catch, capture or reduce to possession.

Safety

Safety

- Falls (from roof or ladder).
- Electrocutation (working near power lines).
- Tool accidents (hammers, nailguns, etc.).
- Heat (working in hot attics, rooftops).
- Histoplasmosis (from bat/bird droppings).
- Animal bites (bats, rodents in home).
 - physical injury (usually minor)
 - rabies

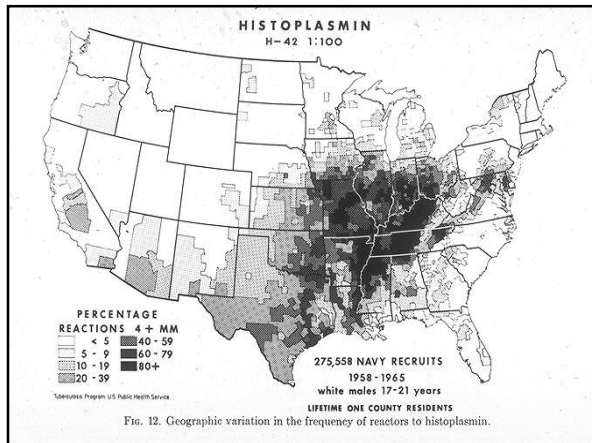
Heat exhaustion

- Symptoms
 - Weakness, dizziness, headache, nausea, clammy skin, dry tongue & thirst, severe muscle fatigue, loss of appetite, profuse sweating, physical collapse.
- Prevention
 - Drink water at regular intervals (15-20 minutes) whether thirsty or not. No caffeine or alcohol.
- Treatment
 - Move to cool place, loosen clothing, drink water or sports drinks, sponge down with cool cloths or towels.



Histoplasmosis

- Infectious disease caused by spores of a fungus called *Histoplasma capsulatum* found in large accumulations of bird and bat droppings.
- Very common in Mississippi River valley
 - About 80% of population already exposed.
- Primarily affects the lungs. Not contagious.
- Symptoms vary greatly; most people have no apparent ill effects or only very mild symptoms.



Histoplasmosis (continued)

- Symptoms usually appear in about 10 days.
- Symptoms may include:
 - mild flu-like respiratory illness, general ill feeling, fever, chest pain, dry or nonproductive cough, headache, loss of appetite, shortness of breath, joint and muscle pains, chills, hoarseness.

Histoplasmosis (continued)

- Can develop into chronic lung problems that can worsen over time.
- If fungus spreads from lungs into other organs it may be fatal if left untreated.
- People with weakened immune systems are at greatest risk for developing severe cases.

Histoplasmosis (continued)

- Diagnosis
 - Skin tests, identifying fungus or antigens in tissues or secretions, finding anti-bodies in blood, lung biopsy, or x-rays.
- No treatment may be necessary for mild cases, but severe infections may be treated with antifungal medications.
- Might be a good idea to get a test to find out your status.

Histoplasmosis: safety measures

- Minimize disturbance of guano to prevent spores from becoming airborne and inhaled.
 - Don't shovel out or sweep up dry, dusty guano.
 - Wet the guano down with a water spray before removal to lessen the amount of dust. A surfactant (wetting agent) may help.
 - A formaldehyde solution is the only effective disinfectant for *Histoplasma* spores, but is a health hazard itself and should only be used by persons trained in its safe application.

Histoplasmosis: safety measures (continued)

- Guano disposal
 - Collect in doubled, heavy duty plastic bags or other secure containers or use a industrial vacuum cleaner with a high-efficiency filter.
 - Check with local and state authorities for requirements for disposal of contaminated materials. Depending on local rules, it might be considered infectious waste requiring incineration.

Histoplasmosis: safety measures (continued)

- Personal protective equipment:
 - Disposable protective clothing and shoe coverings will reduce chances of transferring spores away from work site. Remove & seal clothing before removing respirator.
 - If material may fall from overhead, clothing with hoods should be used.
 - NIOSH approved powered, air-purifying, full-facepiece respirators.

Rabies

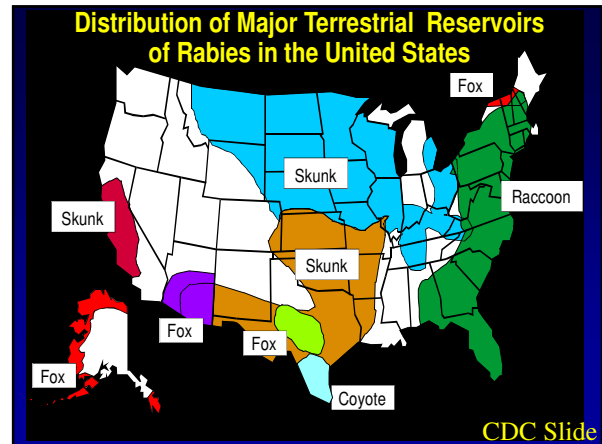
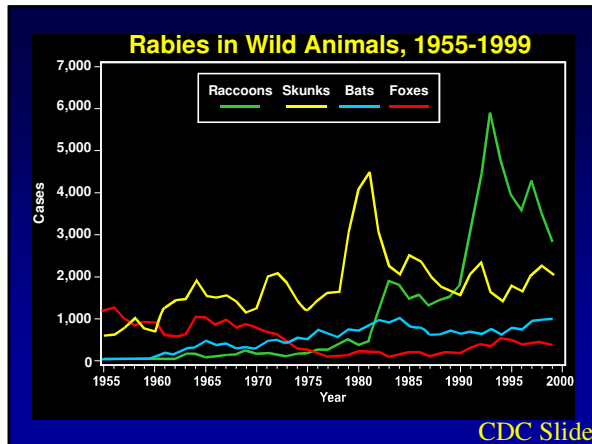
- Rabies is an infectious viral disease of the central nervous system of warm-blooded animals.
- Most often found in raccoons, skunks, foxes, bats, coyotes, dogs, cats, and some livestock.
- Causes fatal inflammation of the brain and/or spinal cord.
- Since 1990 there have been 26 cases of rabies acquired in the US; only 6 cases were associated with common house bats.

Rabies (continued)

- Usually develop about 10 days-7 months after infection and death follows 2-12 days later.
- Early symptoms in humans include pain, burning, and numbness at infection site.
- Later symptoms may be headaches, inability to sleep, difficulty swallowing, muscle spasms of the throat, irritability.

Rabies transmission

- Nearly always by a bite from another infected animal.
- Non-bite exposure can result from contact between infected saliva or nervous tissues and open wounds or mucous membranes of the eyes, nose or mouth.
- Rabies virus not found in bat blood, urine, or feces. One possible case of airborne transmission in the 1950s, but none since.




Rabies in Arkansas

- Skunks account for about 83% of all rabies cases; bats about 10%.
- About 30% of skunks and 12% of bats turned in for testing were actually diagnosed with rabies.
- Rabies is uncommon in house bats; about 4% of Big brown bats and Brazilian free-tailed bats turned in for testing are rabid.
- Only 2 human rabies deaths in AR was in 1991. There were 22 deaths in AR due to bees, wasps, and hornets from 1985-1999.

Rabies: safety measures

- Avoid handling bats
 - Wear thick leather gloves when doing so.
 - Rabid bats may act calm or agitated, so must always be careful in handling them.
- Rabies vaccinations recommended for those who work around bats and other wildlife.

So, you got bit...



- Immediately clean wound:
 - Soap, water, virucidal agent.
- If possible, collect and kill the animal.
 - Avoid damage to head.
 - Keep in secure container.
- Call local health department for medical advice and give them the animal for testing.
- If animal is rabid, or can't be caught, you will probably need additional vaccine shots even if pre-immunized.

Bat Exclusion

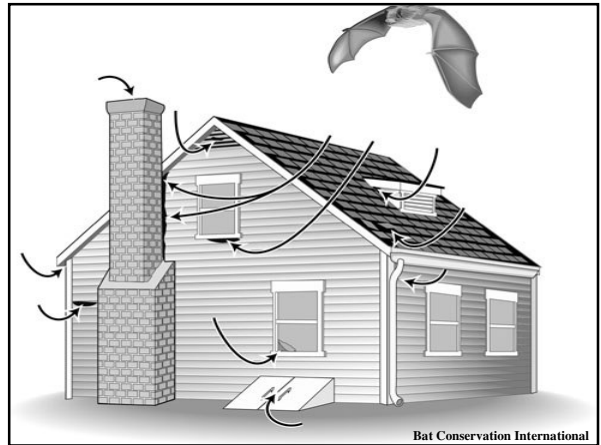
Removal of single bats

- Bats usually come in through an open window or door.
 - Wear leather gloves
 - Wait till the bat is hanging on wall and capture it between a bowl and plate
 - Release outside on tree
- Or close interior doors, open windows, turn on lights and wait for it to fly out.



Colony Exclusion

- This is really a carpentry problem, not a bat problem.
- The long-term solution is to get the bats out and close the entry points they used to get in the house.
 - Screening
 - Be sure to place on outside of vents
 - caulk
 - steel wool
 - replace rotted/broken boards

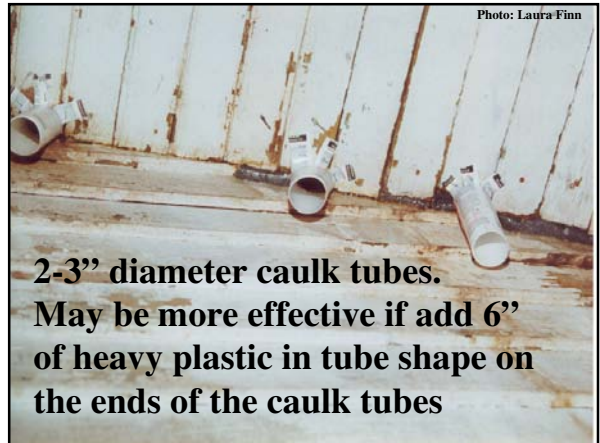
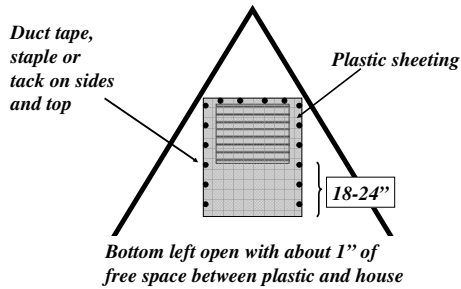


Staining underneath exit point

Photo: David Saugy



One-way door on a roof vent



Protecting baby bats

- Most Arkansas house bats have their young in May and June.
- In order to avoid trapping the pups inside the house, no exclusions should be performed from May-July 15.
 - Avoids unnecessary harm to bats
 - Eliminates decomposition smells

Other options

- Bat repellents:
 - Naphthalene (mothballs) has had some very limited success, but has to be replaced often. Apply at 2.5 lbs./1000 cubic feet. Prolonged inhalation may hurt humans. Not recommended.
 - Cat and dog aerosol repellents may keep bats away from a specific spot on porch ceilings and garages for several months. Do not use when bat present.
- Lights: Sometimes placing strong lights in the roost area will drive bats out.
 - May cause electrical hazard (frayed cords)
- Ultrasonic devices or bat call tapes: Totally ineffective.

Bat Houses

- Bat houses alone will not draw a bat colony from a house. They should be put up before performing a standard exclusion.
- Preferred location would be near previous entry points on structure, or on pole in yard.
- Need strong sunlight, 12-15' from bottom of house to ground.
- 97% of bat houses put up in conjunction with exclusion were occupied in 1999.



Bat traps

- Very strongly discouraged.
 - Unnecessary since standard exclusion methods will get bats out without handling.
 - Require more work to install and monitor.
 - May be harmful to the bats since they can suffocate if the traps fill up or are left unattended.
 - Increases the risks of bat bites and rabies exposures.

Bat Conservation International Bat Exclusion Professional Certification

- Those who meet guidelines will be included on BCI's web site and in referrals.
- Requirements
 - Use of approved methods
 - Completion of questionnaire
 - Can be renewed annually by providing 6 client references who would recommend your work
 - Can be revoked if unapproved methods are used

Web sites

Bat Conservation International

- <http://www.batcon.org>

Internet Center for Wildlife Damage Management

- <http://wildlifedamage.unl.edu>

Centers for Disease Control

- "Protecting Workers at Risk from Histoplasmosis"
- <http://www.cdc.gov/niosh/tc97146.html>