Bat Management

Nebraska Extension
Bat Facts

- Nocturnal, flying mammals
- Not rodents
- Fly with “hands”
- Have claws
- Can crawl on ground
- Good vision
- Timid and gentle, avoid human contact
Bat Anatomy

Drawing: © David Chapman, Bat Conservation International
Nebraska Bats Are NOT Bloodsuckers!
Bat Facts

❖ Eat and drink in flight
  ➢ Water scooped up into a “cup” area between hind leg and tail from lakes, pools, and other sources of standing water

❖ Fragile “needle-like” teeth
  ➢ Unable to chew through structural materials like wood or caulking

❖ Use sonar to find food

❖ Nebraska bats feed on insects
Bat Facts

- Consume $\frac{1}{4}$ to $\frac{1}{2}$ body weight of insects each night; colony can eat over 100 tons of insects in one season
- Bats in Nebraska kill more mosquitoes and other insects than birds or bug zappers

Photo: © Bat World Sanctuary (www.batworld.org)

Big Brown Bat eating a mealworm. Never hold a bat without wearing leather gloves.
Bat Facts

- Live in caves, hollow trees, loose bark, rocky ledges
- In cities, may be found in down spouts, behind house shutters, attics, and storm sewers
Bat Reproduction

- Low reproductive rate
  - 1-2 young per year
- Mate early fall, fertilization takes place late winter or early spring
  - Young born 6-8 weeks later
- Parental care
  - Mother stays with young until late summer

Photo: © Bat World Sanctuary (www.batworld.org)
Common Nebraska Bats

Big Brown Bat \([Eptesicus fuscus]\)

Photo: © Bat World Sanctuary (www.batworld.org)
Big Brown Bat
[Eptesicus fuscus]

- Commonly encountered by the public
- Five inches long from nose to tail
- Brown with darker brown skin on nose, ears, and wings and pale brown underside
- Live in colonies
- Remain in Nebraska year round

Photo: © Merlin D. Tuttle, Bat Conservation International
Major Nebraska Bats

Little Brown Bat [*Myotis lucifugus*]

Can be difficult to distinguish from big brown bats

Always wear gloves when handling bats!

Photo: U.S. Fish and Wildlife Service
National Image Library
Little Brown Bat
[Myotis lucifugus]

- Located in Eastern $\frac{1}{3}$ of the state
- Three to four inches long
- Dark brown; “glossy” in appearance
Red Bat
[Lasiurus borealis]

- Found statewide
- About five inches long from nose to tail
- Bright-reddish brown to rust colored on top, paler red underside, and cream patches on each shoulder
- Migrate south in winter

Photo: © Bat World Sanctuary (www.batworld.org)

Never hold a bat with bare hands!!!!
Human-Bat Interactions

- Beneficial
  - Insect feeders
  - Ecological and Economic importance
    - Eat agricultural pests, such as corn rootworm, thus reducing need for pesticides
    - Guano used as fertilizer
      - 10% nitrogen, 3% phosphorous, 1% potassium; safely enhances plants
      - Long lasting in soils
      - Use only in small amounts and in well ventilated areas

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Human-Bat Interactions

- Detrimental/Harmful
  - Parasites
    - Batbugs can be confused with bed bugs
  - Structural damage
    - Bat urine can be corrosive to wood
  - Contamination
    - Ammonia from urine
  - Fear
Human-Bat Interactions

- Detrimental/Harmful
  - Diseases
    - Fungal: Histoplasmosis--found in bat guano. Risk highest in confined areas with large amounts of guano
    - Viral: Rabies--however, other animals, such as skunks and raccoons, have a much higher incidence of rabies than bats
Bats As Rabies Vectors

- Vast majority are rabies free
- Isolated or downed bats have a higher rate of rabies
- People can be bitten and not know it!
Nebraska Bat Rabies Exposure Protocols

- Assume person was bitten if
  - He or she awakes with bat in room
  - Bat found in room with someone unable to communicate well, i.e. children, intoxicated, mental impairment
  - Any physical contact occurred with bat
  - DO NOT RELEASE BAT
  - DO NOT DAMAGE BAT’S HEAD
Rabies Exposure Management for Bat-related Incidents

Was the patient around a bat?

Was a bat in the same room as a human?

Was the patient alert and awake the entire time the bat and human were in the same room?

Was the patient a young child, alone in the room?

Can the patient say, "I know I wasn't bitten"?

No rabies post exposure prophylaxis needed.

Was the patient bitten? *

Has the bat been captured for testing? (Shots may be delayed for up to 3 days pending test results.)

Test bat for rabies. Is the test result positive or unsatisfactory or indeterminate?

Administer rabies post exposure prophylaxis (PEP): Human Rabies Immune-Globulin (HRIG) on day 0, plus a series of Human Rabies Vaccines (HRV) on days 0, 3, 7, and 14 (immune compromised patients should receive a 5th dose on day 28 and subsequent titer check).

* Thoroughly wash any wounds with soap and water and, if available, flush with povidone iodine solution (or other virucidal solution). Evaluate tetanus vaccination status, update if needed.

Nebraska Department of Health and Human Services
Division of Public Health
Office of Epidemiology
(402) 471-2937

Capture of Lone Flying Bat

- Close exits & hiding places to restrict movement
- Watch bat while waiting for it to tire and land
- Do NOT hit with a tennis racquet
- Don’t stand in middle of room
- Capture bat
- Contact Health Dept. to have bat tested: 402-471-2937
Capture of Lone Resting Bat

- Put on thick gloves
- Get a glass, cup, or plastic container
- Approach slowly and put the container over the bat
- Slide a piece of cardboard between the container and wall. Secure the container.
- Consult residents of the structure to determine possible exposure to the bat. Consult with Nebraska Health (402-471-2937) Dept. about need for testing bat for rabies.

Drawing: © David Chapman, Bat Conservation International
Safely Releasing a Bat

If you are certain there was no exposure to the bat according to Nebraska Protocols, the bat may be released.

Drawing: University of Nebraska–Lincoln
Safely Releasing a Bat

- Place bat on tree branch or trunk as high as possible. The elevation will help it get airborne when it decides to fly.
- DO NOT place bats on the ground as they have difficulty flying from the ground and they are at risk of encountering children and pets.
Removal of Lone Bat

*For single bat in a room with no exposure*

- Open all windows and doors in the room where the bat is observed (see rabies protocols)
- Block doors leading to adjoining rooms
- Leave lights on and stand motionless
- Let the bat fly around looking for an escape route, it will most likely find its way out on its own (Watch the bat leave!!!!)

Do not swat at the bat!
Bat Inspections

Typical Entry Points

- chimney
- between chimney and house
- under roofing
- ridge cap
- flashing and fascia
- under porch roof
- soffits
- vents
- window frames
Bat Infestation Signs

How to know if bats are resident in your home!
Inspection—NO, NO, NO

Photo: University of Nebraska–Lincoln
PPE—Yes!

- Protect yourself before entering spaces where guano may be present.
- Get fit-tested before using a HEPA-filtering mask.
- Improper use of a mask can result in physical injury.
- Wear gloves too.

Photo: University of Nebraska-Lincoln

Wear a HEPA-filtering mask before entering locations where guano may be present.

Wear gloves too!
Bat Infestation Signs

- Single bat in the summer, consider it an accidental entry.
- Finding two bats in the summer, assume it is an infestation.
- Bat found in winter means bats are hibernating in your building.
- Finding a single bat every year, suggests infestation in home.

Photo: University of Nebraska–Lincoln

Bats hanging on outside of attic vent screen.
Bat Infestation Signs

- Bat droppings inside structure suggests infestation, etc.
  - Check if droppings are fresh by placing a newspaper over the pile.
- Frequent sightings of bats around structure should raise suspicion.
- Repeated sightings of droppings on the outside of the building should raise suspicion.

Photo: University of Nebraska–Lincoln
Bat Scat (Guano)

Photo: University of Nebraska–Lincoln Department of Entomology

Note the speckles and insect parts
Mouse vs Bat Droppings

Mouse Droppings
- Scattered
- Hard-when dry
- Pointed end

Bat Droppings
- Soft/crumbly-when dry
- Speckled
- Blunt ends
- Piled

Photo: University of Nebraska–Lincoln
Bat droppings can contain spores that cause histoplasmosis. Avoid disturbing droppings or breathing the resultant dust.

Learn more at http://icwdm.org
Bat Infestations in Structures

- Bats sometimes accidentally find their way in while seeking shelter or feeding on insects near entryway.
  - Can enter through 3/8-inch openings
  - Cannot make their own entry holes

Photo: University of Nebraska–Lincoln
Bat Colony Removal

- Bats do not have to be killed to eliminate them from a structure.
- Excluding bats from your structure involves the same process whether you have 1 or a 1,000 bats.

Photo: James F. Parnell, eNature.com
Check the Calendar

- May to July, let them fly!
- Timing is very important so don’t evict during these months to prevent young from dying
Bat Colony Exclusion

For bats already residing in a structure:

- During the evening, go outside to observe/inspect where bats are entering and exiting
- Begin watching at dusk on a clear night. Have 1 person at each corner of the building.
- Look for bats
- Watch multiple nights to narrow down key exit points.
- Confirm locations by inspecting during the day with ladders.
- Look for guano and rub marks

Photo: University of Nebraska–Lincoln

Notice the brown smudge marks at this gap in the concrete
Bat Colony Exclusion

- For bats already residing in a structure:
  - Create one-way door by hanging one ft strips of flexible 1/2 inch netting over each possible entry and exit points
  - Fasten netting by the top edge above the entries
  - Secure all other gaps and crevices with appropriate sealant (not expanding foam).
  - Leave doors up for a week. Continue to monitor. Caution sometimes bats get spooked and will enter the living area.
  - Remove one-way doors and seal all the entry points.
  - Do not install one-way doors or seal entry points during May-July when young bats may be in the roost “May-July let them fly”
Bat-proofing buildings

- Close unused holes $\frac{3}{8}$-inch diameter or greater.
- Close any unused cracks of at least a $\frac{1}{4}$ inch by $1\frac{1}{2}$ inch.
- Use window screens, chimney caps, and draft guards beneath doors to attics.
- Use stainless-steel wool or sealant to fill electrical and plumbing holes.

Photo: University of Nebraska–Lincoln

Don’t use expanding foam
Bat Exclusion

- Install professionally manufactured stainless steel chimney cap to reduce the likelihood of bats roosting in chimneys or entering buildings from the chimney.

Potential entry points for bats, including the chimney.
Use netting to create a “one-way door” over bat entry and exit points.
Preventing Bat Problems

- Keep screens and doors tightly closed
- Plug holes using products such as weatherproof foam strips and foaming aerosol insulation or exterior caulk.
- Reduce insect populations around doors by replacing regular light bulbs with yellow “bug lights”
- Fill gaps before they get to $\frac{1}{4}$-inch wide.
Repellents

- Commercial products such as Bat-A-Way have questionable effectiveness and have not been tested on Nebraska bats.
- Mothballs and ultrasound devices have not been proven effective.

Photo: University of Nebraska–Lincoln
Poisons and Toxicants

- No toxicants registered for bats in Nebraska or the U.S.
- Would be hard to bait since they eat live insects
Bat Houses

- Roughen the interior to allow the bat to climb
- Paint a dark color
- Fasten to the south side of poles, trees, or buildings at 12-18 ft above the ground
- Locate where animals such as cats, raccoons, owls, or other predators can’t get to it
Bat Houses

Single chambered bat house which still needs painting and mounting.

For more bat house information visit http://icwdm.org
Bat Houses

Do not install bat houses on trees where they don’t receive 8 hours of sun.

For more information on bat houses visit http://icwdm.org
Bat Conservation

- White-nose Syndrome (WNS) is a fungal infection that is killing tens of thousands of bats.
- Some species may become threatened or endangered
- Has it reached Nebraska’s bats?
- No! But it might.

White-nose Syndrome has not yet reached Nebraska’s bats.
Bat Conservation

- Avoid killing bats unnecessarily
- Do not reuse bat exclusion materials unless they have been properly cleaned to prevent the spread of the fungus
Resources/Information

- Bat Conservation International
  - [http://www.batcon.org](http://www.batcon.org)

- Internet Center for Wildlife Damage Management
  - [http://icwdm.org](http://icwdm.org)

- Prevention and Control of Wildlife Damage
  - [http://icwdm.org](http://icwdm.org)
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