Fear …

“Fear is the main source of superstition, and one of the main sources of cruelty. To conquer fear is the beginning of wisdom.”

Bertrand Russell, Unpopular Essays (1950), "Outline of Intellectual Rubbish"
British author, mathematician, & philosopher (1872 - 1970)
What Is a Bat?

A Flying Mouse?
Bats Are Mammals

- They belong to the order Chiroptera which means literally - “hand + wing”
Bat Basics: Anatomy

Arm and hand bones are elongated to support the wing.
Bat Basics: Benefits

Bats Pollinate Flowers
Bat Fact …

*Tequila is produced from agave plants -- seed production drops to 1/3000th of normal without bat pollinators!!*

Think of Long-nosed Bats as our Tequila Connection!
Bat Basics: Benefits

Bats Help to Control Pests
Bat Fact...

Loss of bats increases demand for chemical pesticides, that can jeopardize whole ecosystems of other plant and animal species!!
Bat Basics: Variety

Bats Come in Striking Colors, and Specialized Facial Shapes
Bat Basics: Variety

...And Different Sizes
Bat Basics: Variety

But most Arizona Bats are “LBJ’s”

$LBJ = Little Brown Jobs$
Where Do Bats Live?

- Bats use different types of roosts throughout the year
- Roosts can function as maternity, hibernation, day, or night roosts
- Bats select a variety of different structures for roost sites…
Bats Roost in Caves

Mexican Free-tailed Bats Maternity Colony

*(Tadarida brasiliensis)*
Bat Fact...

Free tailed bats from three caves near San Antonio, Texas, eat a million pounds of insects nightly, including many costly pests.

Entrance to Bracken Cave, Texas
Bats Hibernate in Caves...
Bat Fact …

- Bat droppings in caves support whole ecosystems of unique organisms, including bacteria useful in detoxifying wastes, improving detergents, and producing gasohol and antibiotics!!
Bat Fact…

A colony of 150 big brown bats can protect local farmers from about 33 million rootworms each summer!!
Bats Roost in Rock Crevices...
Some species of Arizona bats roost under exfoliating tree bark

**Southwestern Bat**

*(Myotis auriculus)*
Bats Roost in Mines...

California Leaf-nosed Bat
(Macrotais californicus)
Bat Fact...

California leaf-nosed bat can live in hot desert climates for months at a time without drinking!!
Bats Roost in Trees...

Bats that roost in caves and mines are often colonial by nature...

Bats that use trees are often found roosting in small groups or alone.

Western Red Bat
(*Lasiurus blossevilli*)
nursing two pups
Bats Roost Under Bridges...
Bats Roost In Buildings…

Big brown bats

*Eptesicus fuscus*
Living With Bats
Understanding and Controlling Bats
Bats in Buildings…

Big brown bats
(*Eptesicus fuscus*)

Whispering Pines, AZ
Bats in Buildings…

• Capturing a solitary bat
  – Wearing protective gloves,
  – Place container over the bat,
  – Slide cardboard or plastic between the container and the surface
  – Release bat outside or submit for testing*

*If exposure cannot be ruled out, bat must be tested for rabies–DO NOT RELEASE!!
Bats in Buildings…

• Large colonies can cause odor and noise problems justifying exclusion.
• Most bat exclusion procedures are often simple and inexpensive to the home or business owner.
• Exclusion from entire buildings is also feasible, although professional advice may be warranted.
How Do Bats Get In?
Potential Portals…

Eaves
Potential Portals…

Gables

Flashing
Potential Portals...

Outdoor Fixtures

Concrete Fascia
Roost Selection...

- Bats that use buildings are very opportunistic...they select roost sites that can vary daily and seasonally...
  - Day – Dark, protected niches for sleeping
  - Maternity – Energy efficient temperatures and protection (specialized day roost)
  - Night – Warm, draft-free hangouts near food and water resources
  - Migratory – Temporary shelter (Spring/Fall)
  - Hibernation – Cold, humid undisturbed habitats
Assessing Buildings for Bat Use…

- Telltale signs:
  - Bat Guano (droppings)
Assessment...

- Telltale signs:
  - Bat Urine
  - Old roosts may have urine crystals (amber)
Assessment...

• Telltale signs:
  – Dark staining
Assessment...

- Telltale signs:
  - Bats!!

Inside

Or

Outside
Before Sealing Begins...

• Provide a Safe Exit for Bats
  – Determine main access points
  – Install netting, plastic, or tubes that function as one-way valves over openings
  – One-way valves allow bats to leave but not reenter
  – Leave valves in place for 5-7 days (bats may not exit every night)
  – Avoid exclusions during the maternity season as young may become trapped inside
Exclusion Step 1

Locate Bat Portals…

- Access points can be very obvious or cryptic in nature
- Observation is best method to find all points of entry…
  - Observe at sunset or sunrise (exiting or entering bats)
  - Station observers strategically around suspected areas (compass points)
Exclusion Step 2

Install One-way Escape Valve(s)

Seal Remaining Openings
Exclusion Step 2

One-way valve examples

**Bat Cone**
www.batcone.com

**Bat Excluder**
www.wildlifecontrolsupplies.com

*Do-It-Yourself*
Exclusion Step 3

- Leave escape valves in place for 5-7 days
- Remove one-way valves and seal openings
Exclusion Step 4

Avoid Future Exclusions

- Be proactive with maintenance
- Conduct regular inspections (minimum Fall/Spring)
  - Check for bat use
  - Assess for potential bat portals
  - Repair openings as needed
Exclusion Step 5

- After excluding bats consider ways to improve bat habitat or mitigate roost loss
  - Consider installing bat houses
  - Construct wildlife pond
  - Conserve hedge rows and wind breaks
  - Preserve forest edges and old trees
Sand Box House (Belfry)
Wildlife Water Developments:
Wildlife Water Developments:
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Any Questions?