



# Bracken ground on Bat Homes

Information provided for the support of the bat populations through environment and home. These conservation efforts are helping to create a healthy and sustainable community in Park and Teller Counties, Colorado





# Things to consider

1. Roosting chambers: The number is not critical, but in general, the more chambers the better.
2. Mounting: 1-chambered houses should be mounted on wooden or masonry buildings, which helps to buffer temperature fluctuations. 3 or more chambers are more likely to provide appropriate ranges of temperature and better accommodate the larger numbers of bats typical of nursery colonies. (Tip: Single chambered houses can be mounted back-to-back on two poles to create a three chamber bat house.)





## More things to consider

---

- Partitions: Need to be carefully spaced  $\frac{3}{4}$ " to 1" apart, but the preference is  $\frac{3}{4}$ " (this cuts down on intruders like wasps, rodents, and birds).
- Bat footholds: Partitions and landing areas must be modified to provide footholds for bats. For wooden bat houses the easiest way is score or groove the surfaces horizontally every  $\frac{1}{4}$  to  $\frac{1}{2}$  inch. Scoring tools can be made from blocks of wood with screws protruding through one side, or you can use shallow saw cuts  $\frac{1}{32}$ - to  $\frac{1}{16}$ -inch deep.



# Alternate foothold method

- The use of a UV-resistant **heavy duty** plastic mesh that measures 1/8-inch- or 1/4-inch-square, oftentimes marketed as garden trellis is suitable. **Do not use any metal mesh or metal hardwarecloth, as these are abrasive and can injure bats.** The mesh must be securely stapled every 2" across the entire surface/along all edges (do not cover ventilation slots). The mesh is attached to one side of each roost partition and to the backboard and the landing area. **Similarly, do not use nylon or fiberglass window screening which will wear out quickly and can trap and kill bats.**



# Ventilation

---



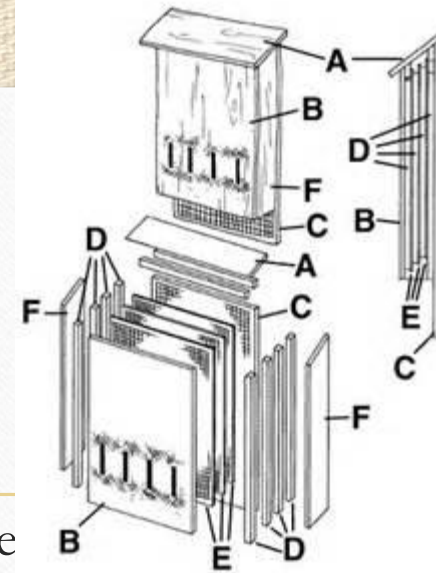
Ventilation slots are critical in houses where average high temperatures in July are 85°F or above, by greatly reducing the odds of overheating on extra hot days.

- ☑ Half-inch slots should be used to reduce the entry of light and unwanted guests, such as birds.
- ☑ Front vent: Should extend from side to side about 6" above the bottom (for houses 3 ft. or taller, approximately 1/3 the distance from the bottom).
- ☑ Vertical vent, 1/2" wide by 6" long, should be included at each end of the rear chamber of multiple-chamber houses.
- ☑ When nursery houses are mounted in back-to-back pairs on poles, an additional horizontal vent slot – like the one in front, but 3/4 inch tall – should be added in the rear. This slot allows bats to move from one house to the other without going outside, but more importantly it provides an ideal temperature range for nursery colonies.



# Construction

- ❖ For both chambered and nursery houses use  $\frac{3}{4}$ , 1, or 2" thick boards. The  $\frac{3}{4}$ " can be for front, rear, and roof panels with the thicker wood used as sides. One-inch ( $\frac{3}{4}$ -inch nominal size) cedar or poplar lumber is recommended for rocket boxes.
- ❖ Cover roofs with shingles or metal for extra protection.
- ❖ Use of  $\frac{3}{8}$ -inch plywood for roosting partitions ↓ weight and ↑ roosting space for a given house size. DO NOT use pressure-treated wood which contains chemicals that are toxic to bats. Alternative materials, such as plastic or fiber-cement board, may last longer than wood and require less maintenance.





# Construction



- ❖ Use coated deck screws or other exterior-grade screws instead of nails to assemble houses.
- ❖ Staples that are used to attach plastic mesh should not protrude from the backs of panels and must be exterior grade or galvanized to prevent corrosion.
- ❖ All seams must be caulked, especially around the roof, with a paintable latex caulk prior to painting.



# Wood Treatment

(Bats need dry, non-drafty homes that provide sufficient warmth without overheating.)



- ❖ The houses need to be caulked and painted to protect against moisture, air leaks and wood deterioration.
- ❖ Apply one coat of primer to all outer surfaces, including vent openings and landings and entry areas. Follow that with two coats of flat exterior, water-based paint or stain in black or a dark color. **Do not** use oil-based products.
- ❖ Application of two coats of dark paint or stain to inside plywood surfaces prior to assembly greatly extends the life span of the bat house and provides a darker interior.



# Location, Location, ...

---

- ❖ The location for bat houses needs to consider both sun exposure and heat absorption (based on house color). Too little sun exposure is the most important known cause of bat house failure.
- ❖ Ventilated houses with tall chambers allow bats to move vertically to find their preferred temperatures through daily and seasonal cycles, which provides a wider margin for error in selecting appropriate sun exposure and color.
- ❖ Bats in nursery colonies prefer warm houses, ideally where temperature gradients cover at least a  $10^{\circ}$  to  $15^{\circ}$  ( between  $80^{\circ}$  and  $100^{\circ}$  F).
- ❖ Bat houses need at least 6-10 hours of direct sun daily.





# Location and habitat



- ❖ Most nursery colonies choose roosts within a  $\frac{1}{4}$  mile of permanent fresh water, preferably a stream, pond, river or lake (because these are natural bat flyways).
- Greatest bat house success has been achieved in areas of diverse habitat, especially where there is a mixture of agricultural use, and natural vegetation, including pastures, row crops, orchards, and overgrown grasslands. Bats find houses while foraging at night, and baiting has not been effective.
- ❖ Bats find houses mounted on poles or buildings in  $<$  half the time they typically need to find houses mounted on trees. Tree-mounted houses also appear to be less attractive, as they tend to receive less sun and are more vulnerable to predators. Locate all houses 20 to 30 feet from tree branches or other obstacles and 12 to 20 feet above ground and at least 20 ft. from the nearest obstacle.
- ❖ Houses mounted under the eaves on wood or stone buildings, but still exposed to the sun, tend to be better protected from rain and predators.





# Batty Successes



Attracting bats to your site might garner more success if the following details are included in your project. Listed in order of success in published surveys:

Mounting locations- Wooden/masonry building, poles, and trees

Roost chamber height:  $> 25"$ ; Roost chamber width:  $> 25"$ ; # chambers:  $> 5$

Location(freshwater source): Rivers and lakes-60%; with ponds and streams-50%

Land utilization: Farms w/ pastures, row crops, orchards, grasslands, and overgrown shrubs; and forests.



# Helpful Hints

---



- When two houses are mounted back-to-back on poles, attached at the sides and covered by a tin roof, solar heat gain is reduced at midday, when the risk of overheating is greatest. This provides a wide range of temperatures between the house that's exposed to full sun and the one that is largely shaded by the other, partly because heat transfer is minimized by the ventilated area between them. An exceptional temperature range is provided for bats to choose from, with a much reduced risk of overheating. extra protection can be provided by extending the overhang of the metal roof to lengthen the period of midday shade.





# Facts



- Mount new houses in fall or winter which will likely sit empty until the following summer when migrators or hibernators return or find their newly constructed home.
- Nursery colonies often begin with just one or a few individuals in the first season, then expand their numbers over the next several years.
- Grouping houses together is also a strategy that has met with success, giving bats the option to house hunt for the house that meets their needs.



# Bat House Plans

<http://www.batcon.org/resources/getting-involved/bat-houses/build>

Under “Resources” you will find:

**The Bat House Builder's Handbook**

**Single chamber bat house plans**

**Four-chamber nursery house plans**

**Rocket box bat house plans**

<https://batworld.org/bat-house-information/> -This site has plans for building a pup catcher which is important in the summer.





# Credits

---

- The Bat House Builder's Handbook by Merlin D. Tuttle, Mark Kiser, and Selena Kiser- Updated and Revised 2013
- A Homeowner's Guide to Northeastern Bats and Bat Problems (Wildlife Outreach Center) PSU.edu(Pennsylvania)
- Bat World Sanctuary, Inc.