



Children's Garden Club
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"All about Bats"

Spooktacular Fall Tour

For the Garden Haefner's Greenhouse
6703 Telegraph Road



HAEFNER'S GREENHOUSE

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"Education is not preparation for life; education is life itself."—John Dewey

Welcome to the October Children's Garden Club Meeting. We Thank - Greg Haefner, Jenny, and staff for hosting this month's meeting. Glad to be back from our visit this spring. Today they are going to share information all about - Bats - are not just for Halloween and Vampires. Bats may look scary, but they help the gardener in many ways. Here's how to attract them to your yard.

Next month on November 4 we will be back at Sherwood Forest Nursery, 2651 Barrett Station Road with a special treat all about chickens; our guest speaker will be Seth Jansen – Easy Chickens – Healthy Fun, Educational.

Bats can thank Dracula for their bad reputation as demonic, blood-sucking, disease-ridden parasites, but nothing could be farther from the truth. These nocturnal mammals are actually timid, gentle creatures that avoid human contact (and hair), and they have a lower incidence of rabies infection than do common wild animals like skunks and raccoons. Really, we should be thanking them. Most North American bats feed exclusively on insects, devouring more mosquitoes and other insects.



What frightens you? Snakes, heights, spiders, bats, for some it is just the thought of one of those winged critters swooping near me at dusk sends shivers down my spine. But, as a gardener, I've begun to think much differently about them. Yes, they may be frightening, but there are amazing benefits of bats for your garden.

Today's Project

For the Garden will host a fall program for early childhood and elementary school-aged children. We invite your class to experience this fun and educational program about bats! We will explore some little known facts about bats, talk about their importance to our environment and hopefully take away some of the mystery and fear associated with these interesting creatures. We promise an hour full of information disguised as fun! Our program includes a greenhouse tour, stop in the pumpkin patch, planting pansy and great photo opportunities. Each trip will end with a trip through our fun (not spooky) maze!

- Bats are flying mammals.
- While others can glide, bats are the only mammals capable of continued flight.
- There are over 1000 different bat species.
- Bats are nocturnal (active at night).
- Bats 'see' in the dark using a special skill called echolocation. Bats make noises and wait for the sound waves to bounce back off objects (an echo), if it doesn't bounce back then they can safely fly forward. They can tell the distance of various objects by how quickly the sound waves bounce back to them.
- Most bats feed on insects, while others eat fruit, fish or even blood!
- There are 3 species of vampire bats which feed solely on blood.
- Vampire bats have small and extremely sharp teeth which are capable of piercing an animal's skin (humans included) without them even noticing.
- Vampire bats can carry rabies, making their bites potentially dangerous.
- Some bats live by themselves while others live in caves with thousands of other bats.
- Bats can live for over 20 years.
- Pteropus bats (also known as flying foxes or fruit bats) are the largest in the world.





COMMON NAME: Common Vampire Bat
SCIENTIFIC NAME: *Desmodus rotundus*
TYPE: Mammals
DIET: Carnivores
GROUP NAME: Colony
AVERAGE LIFE SPAN IN THE WILD: 9 years
SIZE: Body, 3.5 in; wingspan, 7 in
WEIGHT: 2 oz. (Varies; can double in one feeding)
SIZE RELATIVE TO A TEACUP:

Plant a **Bat Garden**. Make a space for **bats** to thrive in your backyard! With natural habitats declining, you can help **bats** by providing food, water and shelter. In return, **bats** will eat many of your **garden's** pests and, on occasion, put on a show for your friends.

What flowers are bats attracted to?

Planting night-blooming flowers will help attract bats (and give your yard another level of beauty). Some great **night-bloomers** include **Datura**, **moonflower**, four-o'clock, **yucca**, **evening primrose**, night-blooming **water lily**, night-blooming jessamine, **cleome**, and **nicotine**.



Bats look scary, but they won't harm your garden

How do you attract bats to your garden?

Follow these simple steps and turn your garden into a bat haven...

1. Plant night-scented flowers.
2. Build a pond.
3. Let your garden go a little wild.
4. Put up a bat box.
5. Create linear features i.e. hedgerows/tree lines.
6. Reduce or remove artificial lighting.
7. Keep cats indoors at night.

Several things can be done to create good bat habitat:

1. Leave dead trees on your property if they pose no hazard. ...
2. Keep your yard as natural as possible. ...
3. Attract bats by planting herbs and flowers that invite night-flying insects.
4. Provide a water source. ...
5. Build a bat house (see A Better Bat House).

While most insect-feeding birds are diurnal, feeding on insects that are active in daylight, bats have perfected a feeding strategy that is targeted at night-flying insects. Moths and mosquitoes may be their mainstay, but they also feast on insects ranging from gnats to large flying beetles. Bats will consume from a quarter to half their body weight in insects each night. This means that an average colony of any common species of bat may eliminate more than 100 tons of insects in one season.

Studies conducted in Kansas and Canada over the last few years have shown that bat populations can effectively control corn rootworm moths, thus reducing and even eliminating the need for agricultural insecticide applications in some areas. If bats can effectively control insects on such a large scale, just imagine what they can do in your garden.

Bats do more than help with insect control. Their excrement is a prized organic fertilizer. Bat guano typically contains 10 percent nitrogen, 3 percent phosphorus, and 1 percent potassium, and it has no fillers, as other types of fertilizer often do. This natural plant enhancer benefits flowers, ornamentals, vegetables, and herbs. It is also extremely long-lasting in most types of soil.

MAKE YOUR YARD BAT-FRIENDLY

To take advantage of a bat's contributions to the environment, consider making your yard and garden bat-friendly. Bats, like all animals, need food, water, and shelter. Since there are plenty of insects in most gardens to provide their favorite entrée, all we need to supply is water and shelter.

5 Bat Facts

1. Let me drop some bat knowledge on you and, like me, you'll come to appreciate these creatures. Bats make up almost a quarter of the entire mammal population, and they're the only mammals that fly.
2. Seventy percent of the more than 1,000 bat species feed exclusively on insects, and some bats catch upwards of 600 mosquitoes per hour.
3. Only three species of bats spread rabies (and they live in Central and South America).
4. If you place a bat house in your yard, it will be occupied within an hour.
5. A bat can consume one quarter to one half of its body weight in insects each night. A nursing mama bat can eat more than her body weight in insects nightly. Benefits of Bats for Your Garden. As a gardener who is trying to avoid toxic chemicals and insecticides in your garden, bats are a powerful helper.

Here's why:

1. Bats eat mosquitoes, but they also devour midges, caterpillars, moths, gnats, and large flying beetles. Some birds will also eat these insects, but they are only active during the days whereas bats work the night shift.

2. According to [Finegardening.com](#), In Kansas and Canada, bat populations have effectively eradicated corn rootworm moths, which has dramatically reduced the need for insecticides.
3. What goes in must come out. After eating all of those insects, bats digest and excrete guano (bat poop) which is a valuable garden fertilizer that's rich in phosphorous and nitrogen.
4. Bats are pollinators. You know about the troubles affecting [honeybee populations](#). So, as gardeners we need a diverse group of pollinators to help our gardens grow. That's where bats come in.
5. Do you enjoy tequila? According to [The National Wildlife Foundation](#), tequila is made from the agave plant, which relies solely on bats to pollinate its flowers and reproduce.
6. According to the [New York Botanical Garden](#), bats also distribute seeds:
7. "The bats ingest the fruits, digest the pulp surrounding the seeds, and then defecate the seeds. Seed retention time within bats is often less than 20 minutes and the bats often defecate the seeds while in flight. The seeds of such plants as *Cecropia*, *Solanum*, and *Vismia* are adapted for dispersal by bats and are often the first plants to colonize large open areas."

3 Ways to Attract Them

Have I convinced you that bats are handy garden helpers? Good! Now, you can make your garden an attractive habitat for them to encourage them to hang around.

1. Give them a water source. Don't worry if you don't have a pond on your property or don't live near a stream, a bird bath is enough to satisfy bats.
2. Plant night blooming flowers such as Datura, moonflower, or yucca.
3. Offer them shelter. Buy a bat house online or from your local garden center. If you're handy you can [build your own](#). However, if you have an old decaying tree on your property they'll be perfectly happy to live there.

Bats are blood-sucking, disease ridden, winged rats, right? Perhaps it's because they are creatures of the night or because of their literary connection to Dracula. Whatever the reason, bats have a reputation as something to be feared and reviled. Although many myths hold a kernel of truth, most bats are more friend than foe. An important part of the ecosystem and a gardener's ally, separating fact from fiction may have you reconsidering this "creepy" night stalker.

Myth: Bats are blood-suckers.

Nearly all bats feed not on blood, but insects, fruit, or nectar. Of the over eleven hundred species of bats, only three, found only in Central and South America, drink blood. One feeds on cattle and the other two on birds. They do not actually suck blood, but cut into the hide with sharp teeth and lap at the incision (usually less than a teaspoon).

Myth: All bats carry rabies.

Bats aren't any more likely to carry the disease than other mammals. Although rabies is a concern, as with many animals, fewer than one-half of one percent of bats contract the disease and the likelihood of attack by infected bats is slim. As with all wild animals, it is still advisable to avoid physical contact.

Myth: Bats are winged rodents.

Although similar in size and build, bats actually have more in common with primates than rats or mice. Of the order Chiroptera (meaning "hand-winged") they do, of course, have wings and are the only mammal in existence capable of true flight.

Myth: Bats are aggressive toward people.

Most bats are docile and will only bite defensively. In most cases, people are bitten by bats only when attempting to handle or move them. If encountering an injured or otherwise grounded bat, it is advisable to contact animal control. Bats behaving erratically or aggressively may be ill and should be avoided.

Myth: Bats are blind.

Bats are born blind, but soon develop excellent eyesight, although they are unable to differentiate colors. This myth probably comes from their ability to hunt well at night, using echolocation (extremely efficient sonar capabilities) to target and collect prey.

Myth: Bats are pests.

There is truth in this myth, but perhaps not what one expects. Although bats nesting in attics, garages or other insecure structures can be a concern for homeowners, bats are opportunistic nesters and are incapable of directly causing damage to structures or wiring. They can, however, become a noisy and messy nuisance when taking up occupancy in houses. Trapping is not recommended, as bats have excellent homing capabilities and will return to the site even from great distances. The safest way to remedy a problem with bats nesting in attics or walls is to locate and seal any potential entry points while bats are out.

Bats may be unwelcome house guests, but encouraging them to nest in nearby locations can be a great boon to gardeners or those who like to spend time outdoors. Almost all of the 40-50 species of bats in the United States are prodigious insect-eaters, feasting on anywhere from 600 to 1000 night-flying insects per feeding hour, including mosquitoes and many garden pests. These nocturnal insectivores ease the impact of pests on home gardens and save commercial farmers estimated billions in crop loss and pesticide costs.

Ready to welcome these misunderstood beneficial predators into your yard? Adding late-day or night blooming plants to your garden will increase your yard appeal to bats. Try moonflowers, honeysuckle, or

evening primrose. Adding a simple wooden bat house to your yard will also offer bats a safe place to roost without the need for cave or belfry.

Bats are victims of bad PR. They carry rabies. They tangle in your hair, suck the blood from their victims and turn into vampires on dark and stormy nights. Poor bats! Their unwarranted reputations have been the result of bad press and worse movies. Most of the myths you've heard are simply untrue. The truth is, attracting bats to your backyard is one of the safest and most efficient methods out there for natural insect control. One little brown bat can eat 1,200 insects per hour. Now imagine what a small colony can do!

One of the best ways of attracting bats to your yard is by building a bat house. Learning how to attract bats to a bat house takes a little effort, but it's definitely worth it. Just think about how pleasant it will be to sit outside on a balmy, bug-free summer night watching the swoops and dips and squeaks of your very own nighttime entertainment. That's what building a bat house can offer.

Bat House Location: How to Attract Bats to a Bat House

Your bat house's location is one of the most important factors in how to attract bats to a bat house. Bat house plans abound, but the best plans in the world won't be attracting bats if it's not in the right place.

The temperature inside the house is critical. These furry little creatures prefer temperatures between 85 to 100 F. (30 to 38 C.). Warm, sunny spots are a must for bat house locations and the color you choose will also affect the warmth or coolness of the structure. The houses should be painted brown or gray. Three coats of flat, exterior, water-based paint are best.

A house that gets only a few hours of sun a day should be painted a darker shade while a lighter color should be used on boxes with a long daily sun exposure. Many bat lovers find success in double houses either side by side or back to back, one side dark and one side light. This method allows the bats to relocate within the structure according to their needs.

Your bat house location should be within a quarter mile of a freshwater source; a pond or stream or artificial source is fine. Bats prefer a home that is supported by a pole or the side of a building and fifteen to twenty feet off the ground. These two criteria for bat house locations offer the inhabitants open, direct flight access and better protection from predators such as birds of prey and snakes. If using a pole, consider a baffle as well.

Size matters. There are many bat house plans available on the Internet and most will work in areas where a colony is already established, but if your concern is how to attract bats to a bat house where none were before, bigger is better. They offer a greater variation in interior temperatures and the space needed for females and their pups.

Bat houses can be set out at any time during the year, but since bats tend to set up their colonies in early spring, building a bat house can be a great winter project.

Bat House Plans: Building a Bat House

Now that you know how to attract bats to a bat house and have chosen your plan, it's time to begin building. A bat house, according to extensive bat research, should have chambers at least 14 inches wide and 24 inches tall. It should have a wide landing area with a very rough surface beneath the entrance. Use ½ inch exterior plywood or cedar for the construction. Both have the rough surfaces bats need to grasp, although it doesn't hurt to roughen the interior even more. Do not use pressure treated lumber. Modern methods of preservation that may no longer be harmful to humans may still be harmful to bats.

Bats need a waterproof environment, so regardless of your bat house plan's instructions, it is recommended to caulk all outside seams on the walls and roof. Consider a metal or shingle clad roof. It will help keep heat in and rain out, and prolong the life of the structure.

Once you've chosen your bat house location and have your structure painted and hung, it's time to look at the future. Maintenance of the house and good health practices are important, too. Any wasp nests should be cleaned out each winter and new caulk and paint should be applied every three to five years. Collect **bat guano** regularly with a shovel and gloved hands and dispose of it in your compost pile or garden beds. It makes a great organic fertilizer.

Lastly, please remember that these creatures are wild animals. Warn children and visitors that they are not to be caught or touched. The threat of rabies is minimal, but bats can still give a nasty bite when frightened or provoked.



National Wildlife Federation's
GARDEN FOR WILDLIFE™



Build a Bat House

Photos and story by Carla Brown, NWF Web Producer

I love bats because mosquitoes LOVE to bite me. Pesticides can be harmful to mosquitoes' predators as well as mosquitoes. According to Bat Conservation International, **one little brown bat can eat 60 medium-sized moths or over 1000 mosquito-sized insects in one night!**

Bats are also interesting because:

- In many ecosystems, they play a key role in pollinating plants.
- There are more than 1,300 species of bats in the world!
- Some bats use echolocation, or high pitched chirps which bounce off objects in front of them, to find their way in the dark.

Before I share my bat house building experience, let me say that I am no carpenter. This was my first time using a circular saw. Hopefully this can help even the least handy person build a bat house.

Why Build a Bat House?

You might be surprised: bats don't always live in caves. Some bats spend winter months in caves, but most bats spend summers in trees, under bridges or in old buildings, where they give birth and rear young.

Your goal is to **make a bat house that mimics the space between bark and a tree trunk**. That would be the bats' ideal nursery. That's why the space inside a bat house is very narrow, unlike a bird house which would house a nest. Bats like tight spaces. They also need it nice and warm for the babies. That's why we paint the box a dark color in most climates and why we caulk the sides to keep the heat in. Also, you'll be using a saw to rough up inside the box. That makes it more like tree bark and easier for the bats to climb up.

You might wonder why you need to build a bat house. Why can't the bats just find a nice tree? That is the challenge for many bat species as forests are cleared. Ideally they would live in a natural home but we build bat houses to help those who can't find space in a forest.

A bat house is also a great way to **provide cover for wildlife**, as well as a **place for wildlife to raise young**--two components of becoming a **National Wildlife Federation Certified Wildlife Habitat site**.



How to Build a Bat House

First I printed the **Small Economy Bat House plan** (pdf) from Bat Conservation International's website. (They also have a *Bat House Builder's Handbook* available for free in a digital version on their **bat house pages**.) The big surprise was that this bat house ended up being bigger than I expected: two feet wide and almost three feet tall! According to their website, a successful bat house can be smaller (14 inches wide instead of 24 inches wide), but this one was designed to easily use up a 2 foot by 4 foot piece of plywood with fewer cuts.

That was not how I had pictured a bat house. Have you ever seen bat houses for sale that are smaller or shaped like a bird house? I have. That just means those houses were made by people less acquainted with bat needs.

I read over the plan and I found that **I needed a location with:**

- lots of sun;
- at least 15 feet off the ground (to protect against predators); and
- ideally a water source nearby (so the mother bat doesn't have to leave her young for too long).

Interestingly, bats are less attracted to bat houses mounted on trees. There's a few reasons for this:

- It's too easy for predators to get bats as they exit
- The branches causing obstructions to exiting bats which drop down then up into flight
- It's too shady from branches above.

Bat houses mounted on buildings retain heat better and are less accessible to predators. You can put them on a pole though. Luckily my townhouse is three stories high and has a sunny side. It's also near a stream. So I felt I probably had a good site.



Supplies Needed to Build a Bat House

The supplies on the Bat Conservation International plan are:

- 1/4 sheet (2' x 4') 1/2" AC, BC, or T1-11 (outdoor grade) plywood. DO NOT use pressure treated wood.
- One piece 1" x 2" (3/4" x 1 1/2" finished) x 8' pine
- 20-30 1 1/4" coated deck or exterior-grade Phillips screws
- One pint dark, water-based stain, exterior-grade
- One pint water-based primer, exterior-grade
- One quart flat water-based paint or stain, exterior-grade
- One tube paintable latex caulk
- 1" x 3" x 28" board for roof (optional, but highly recommended)
- Black asphalt shingles or galvanized metal (optional)
- 6-10 7/8" roofing nails (optional)

Tools Needed to Build a Bat House

- Table saw or handsaw
- Caulking gun
- Variable speed reversing drill
- Paintbrushes
- Phillips bit for drill
- Tape measure or yardstick
- Scissors (optional)
- Staple gun (optional)

For those of you who do not normally buy wood, here are some tips:

- Try to purchase **Forest Stewardship Council certified wood** and/or recycle scrap wood.
- When you buy a piece of wood that is advertised as 1 inch by 2 inches, it is not actually that big when you measure it. It's more like 3/4 inch by 1 1/2 inches. That was important for me to know because it allowed me to use scrap wood for part of the project.

The supply list in the bat house plan was very helpful, but I would add:

- Two clamps for clamping wood while you saw or drill
- Safety glasses for when you use power tools
- A small broom for sweeping sawdust

Also, the bat house plan calls for paint. I didn't know what color and initially I thought white to match my house trim. But then I checked their website and they have a map where you look up **what color to paint your bat house**. For my area, I need dark brown or gray.

Building the House

Step 1: Wood Cutting (30 minutes)



Measure and mark where you need to cut the wood according to the plan. Clamp it down to a sturdy spot for safety. You cannot safely hold the wood and the circular saw. Adjust the blade to the correct depth depending on the width of your wood. It takes only five cuts. Don't forget your safety glasses.

At this point, I took the wood and laid it together to get a sense of how this was going to look. You'll see that the bottom piece is the biggest. The 1X2 inch pieces form the sides of the bat house and then there are two smaller pieces of plywood on top. The gap between those two is a ventilation slot.

Step 2: Putting grooves on the back piece (2 hours)



This was the most difficult part of making the bat house, but it's the most important. The goal is take the plywood, which is very smooth, and roughen it up to provide places for the bat to crawl up into the house. The instructions said that you can do this by cutting grooves into the wood. Another option is to find sturdy plastic mesh and staple it along the backboard. I chose to cut grooves because I think it will look better and also if I was a bat looking for a tree, I might not be attracted to a lot of plastic. But both options apparently work.

The instructions say that the grooves need to be about a half inch apart, so I measured and marked where I thought the grooves should go.

When it came time to cut the grooves, what I found challenging was that I didn't know what type of tool to use.

Since at first I was shy about using the circular saw, I tried to use a hand saw. After 30 minutes and only three grooves, I realized I would have to rely on technology.

I set the circular saw to only 1/16 of an inch, reclamped the plywood and started cutting grooves into the backboard. They were not always perfectly straight lines, but that's not important because trees do not have perfectly straight grooves either.

Once I had cut grooves over the whole backboard with the circular saw, I took my hand saw and deepened some of the grooves. I did this because I was not sure if the circular saw went deeply enough and also to roughen it up even further.

Step 3: Staining inside the bat house (1 hour)



Bats like it dark inside their houses so it's important to stain all inside parts a dark color. First you have to sweep all the sawdust carefully from the backboard, especially from the grooves that you cut.

I chose a walnut stain because it was the darkest one at the store. It's important to use stain rather than paint because paint would fill in the grooves you just cut. Stain just soaks into the wood nicely.

It only takes two coats of the stain, and the stain dries fast if you are making your bat house outside in the sun.

Step 4: Caulking and screwing on the sides (30 minutes)



If you are going to use plastic mesh to help the bats climb inside your bat house, now is the time when you would staple it on. Make sure it hangs all the way down to the "landing pad" area so bats have something to grab on to.

Before adding the side pieces, apply caulk. This seals the bat house to help keep the heat inside. Baby bats need a warm home - reaching 80 to 100 degrees Fahrenheit in July.

Next you use your power drill to attach on the side pieces. Since these pieces are rather narrow, they can easily split. A way to avoid splitting is to pre-drill the holes with a drill bit that is smaller than the size of your screw. Then, when you drill in the screws, they go in much easier and your wood stays whole.

Step 5: Caulking and screwing on the top pieces (30 minutes)



Next, attach the top two pieces of plywood. First caulk to ensure a snug fit. Then follow the same advice for drilling and attach the larger of the two top pieces.

Before you attach the smaller of the two pieces, measure to make sure your ventilation slot is about half an inch.

Step 6: Caulking the sides and adding the roof (15 minutes)



To ensure there are no gaps between all these pieces of wood where heat could escape, leaving our poor bats shivering in the cold, put some caulk all around the sides in any gaps that you see.

Finally, add a piece of wood to the top to form a roof.

Step 7: Priming and painting the bat house (variable given paint drying time)

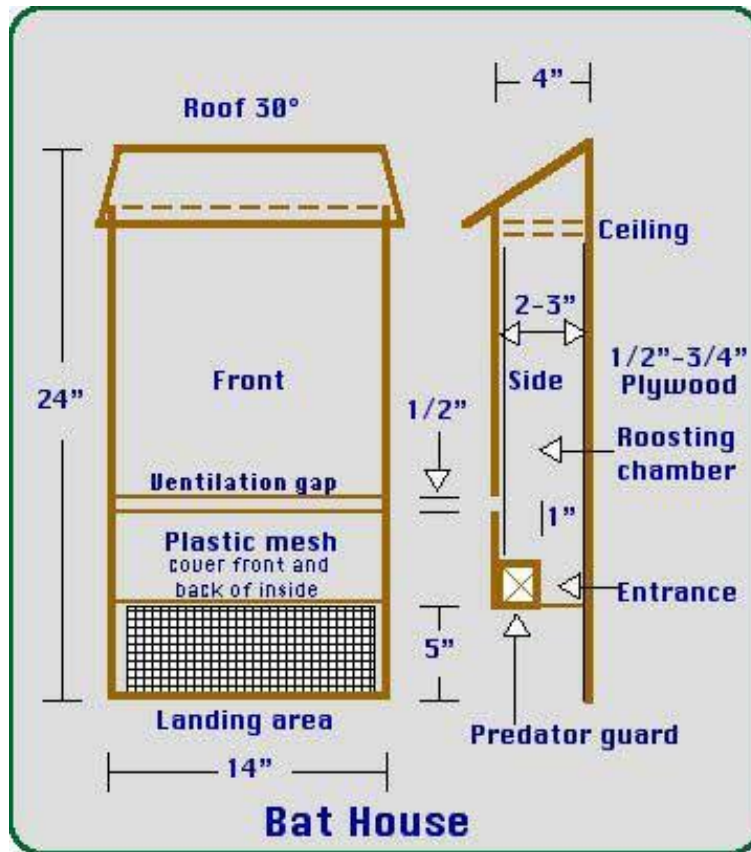
Finally, we need to ensure the bat house lasts a long time so we prime and paint it. We prime it with an exterior primer that discourages the growth of any plants or mold. Here I am applying the primer. Next I painted four layers of dark paint - in my case it was dark brown.

Writer's Note: I have to be honest with you: I built this bat house when I had little babies, and as any young mother knows, hanging a bat house doesn't really reach the top of the "to-do" list. So I gave the bat house to a friend at the National Wildlife Federation in the hopes it might get put up here. Unfortunately we don't know what happened to it. We looked all over, but it's now been six years and there's no sign of it. So, here is how you SHOULD mount your new bat house!

Step 8: Mount the Bat House (20 minutes)

Bat houses should be mounted on poles or buildings, which provide the best protection from predators. Wood or stone buildings with good solar exposure are excellent choices, and locations under the eaves often have been successful. All bat houses should be mounted at least 12 feet above ground; 15 to 20 feet is better.

I hope you enjoy building your bat house, whether it's in celebration of bats at Halloween or any time of the year. Remember, once you put up the bat house, it may take a few years for a bat to find it. They will come looking in the spring time, so ideally it should be hung by late winter





Rocket Box Bat House Design

Dan Dourson, USFS, Kentucky
John MacGregor, with Northwest
Modifications by Patricia Otto

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