FROM THE BAT ROOST

Welcome to Volume 10 of The Bat House Researcher. To celebrate our tenth anniversary, we’ve designed a new logo and a new look for your newsletter. This is a very special year in the world of bats: Not only does it mark our first decade of bat house research, but 2002 is the twentieth anniversary of Bat Conservation International. It is also the centennial of the first known bat house, for which we salute Dr. Charles Campbell on page 5.

Also in this issue are stories about some of the project’s successful bat house landlords, including four Research Associates in Texas who have attracted colonies of big brown bats (page 1), and another in California who has built and/or installed 61 houses, 11 of them integrated into a dam spillway (page 3). We’re also looking at the track record of triple-wide bat houses—a 4-foot-wide (1.2-meter) nursery design that’s proving its worth across the U.S. and in the Cayman Islands (page 6).

In our newsletter this fall, we’ll examine the use of bat houses by Indiana bats, an endangered species. And we’ll include a set of plans for a five-chamber nursery house.

We thank everyone for sending in their 2001 Data Report Forms. We’ve received more than 500 so far, and Selena is busy compiling results. Look for a full report in the fall issue, which will also include 2002 report forms.

Feel free to drop us a line anytime with comments or questions, or just to tell us how your bat houses are doing. Let us know if you’re moving or have changed your e-mail address or phone number. As always, we welcome your tips, suggestions, and story ideas. Thank you for supporting the project. Until next time, happy batting!

Mark & Selena

BIG BROWN BATS IN NORTHEAST TEXAS

Mark Kiser

Marvin and Linda Maberry are exceptionally good at luring bats into bat houses. They’re also good at spreading their success and enthusiasm to neighbors in the Pineywoods region of northeast Texas. The Maberrys, bat house manufacturers and Lifetime Honorary Research Associates who live in Daingerfield, have more than 500 big brown bats (Eptesicus fuscus) in a dozen bat houses. A single house hosts more than 300, the largest group of big brown bats reported in any bat house. Most maternity colonies of big brown bats number only 25 to 75 individuals, with some as small as five; colonies of up to 1,000 are extremely rare.

Marvin has been observing big brown bats at his home since 1989, when he began designing and testing plastic bat houses. One bat moved in the first year, with improved success coming gradually as he experimented, refined his designs, and added more houses. In 1996, when maternity activity was first observed, 30 to 35 bats inhabited seven houses. A year later 107 showed up, and in 2000, he counted approximately 400 bats.

Male and female big brown bats typically divide into nursery and bachelor colonies for much of the summer. Males often spend the summer alone or in small bachelor colonies. Males and females start mixing again after the pups are weaned and nursery colonies begin to break up in August. Big brown bats rarely move more than 48 miles (77 kilometers) between their summer and winter roosts, and they’re extremely loyal to the roosts where they were born. Most big brown bats travel no more than 0.6 to 1.2 miles (1 to 2 kilometers) between roosting and feeding sites at night, though some may travel up to 2.4 miles (4 kilometers). Such close-to-home behavior means that attracting this species to backyard bat houses especially benefits neighborhood pest reduction.
While counting bats three or four times a week, Marvin has learned their habits well. The bats arrive from early to late March. Pups are born in mid-May and are flying by mid-June. Most leave in October, although as many as 200 remain throughout much of November. Six to eight bats typically overwinter from December to March, leaving only when the temperature dips below 24° F (−4° C), which usually happens for only about a week. January to early March 2001, however, was colder and wetter than normal and the bats were gone for up to two weeks at a time. The entire colony’s spring return was delayed two weeks. Nonetheless, when 300 big brown bats finally arrived at the end of March, Marvin knew 2001 was going to be his best year yet.

One of his newest designs, installed in April 2000, proved particularly attractive. The light brown, 4-foot-wide (1.2 meter), six-chambered La Casa model is built of half-inch-thick (1.3 centimeter) insulation board, with a galvanized-steel shell and a coating of commercial-grade stucco inside and out. It was chosen by most of the overwintering bats from 2000 through 2002 and held a record 332 bats on June 19, 2001. Of 12 houses available, the La Casa and two smaller, insulated models with plastic exteriors were favored as maternity sites. Three nursery-style houses and six rocket-style houses (Belfry Tower I and II models added in 2001 [TBHR, Spring 2001]) are used mostly by smaller bachelor groups or individuals.

The Maberry’s success is contagious. Their designs have gone up at three nearby properties and big brown bats inhabit them all. Both Bill and Betty Martin, 1.5 miles (2.4 kilometers) from the Maberrys, and Wayne and Linda Bryan, 4.7 miles (7.5 kilometers) away, have attracted maternity colonies for the past two years. Last year, the Maberrys first observed pups on May 10, the Martins on May 12, and the Bryans on May 14. James and Darla Phillips, 6 miles (9.6 kilometers) away, installed an eight-chamber Condo bat house in October 2000 and sheltered a bachelor group of 4 to 10 bats from October to April 2002.

The Martins put up their first plastic house (insulated, off-white, and west-facing) in 1998 and added a second one (uninsulated, dark brown, and east-facing) in 1999; the two houses are now mounted back to back. While both were used during the past two years, bats preferred the insulated house for raising young. The Martins counted 91 bats in spring 2001. Both houses were empty in late summer, after pups started flying, but three bats returned in October. It’s possible these bats are moving back and forth between the Maberrys’ home and the Martins’, although they probably have a closer alternate roost. Frequent roost switching by big brown bats, especially after pups begin flying, has been reported by other Research Associates, including Harry Harnish at Devil’s Den State Park in northwestern Arkansas.

In May and June 2001, the Bryans observed 125 bats in their seven bat houses [TBHR, Fall 2001]. A pair of off-white, plastic, insulated houses, installed in May 1999, was the bats’ top choice, followed by a pair of experimental insulated houses with dark gray, stucco-coated metal shells. The steel-clad houses, erected in May 2000, are similar to Marvin’s La Casa model, but are only 2 feet (61 centimeters) wide. Three plastic Belfry Tower I and II models that the Bryans added in June 2001 sheltered a few bachelors. Bat numbers were lower during the hottest part of summer, but 124 returned in late October and early November, with 108 in the cooler, plastic pair and 16 in the warmer, south-facing metal house. By early December, however, the metal house contained more bats (30 to 40) than all the others combined. After mid-December, eight bats overwintered, in both metal and plastic houses except on the coldest days.

**DISTRIBUTION OF THE BIG BROWN BAT IN NORTH AMERICA**
Bat houses made with thin outer shells of metal or plastic, combined with insulation, appear to be especially inviting to big brown bats in northeast Texas. Little brown bats (*Myotis lucifugus*) and Mexican free-tailed bats (*Tadarida brasiliensis*) are also using Maberry's insulated houses in other states [TBHR, Fall 2000]. Big brown bats often abandon roosts when temperatures exceed 95° F (35° C), so insulation in certain types of houses could be beneficial in warm climates by reducing the possibility of overheating. But with wooden houses, which have thicker exteriors, insulation may prevent adequate heating. We encourage more side-by-side tests of insulated versus uninsulated houses.

When trying to attract big brown bats, you may also consider painting or staining the house's exterior a lighter shade or positioning it so it receives a bit less sun exposure than normally recommended for your area (see page 17 of The Bat House Builder's Handbook, 2000 and 2001 printings, or go to www.batcon.org/bhra). Marvin's experimentation continues to produce innovative, successful designs and we look forward to hearing from him and our other Research Associates in Daingerfield this summer.

This dam on Pardee Reservoir, near Sacramento, California, is home to an unusual bat roost. Bob Wisecarver and the East Bay Municipal Utility District converted one of the 16 spillway tunnels into an artificial bat cave that was used by 2,500 bats last year.

**Research Associates in Action: Bob Wisecarver**

Mark Kiser

"B

At House Bob," as he's known to his friends, is a true champion of wildlife conservation. When not building boxes for Barn Owls (*Tyto alba*) or working on habitat restoration projects, Bob Wisecarver keeps busy constructing, installing, and monitoring bat houses at farms, vineyards, parks, preserves, and backyards across northern California. Built primarily of donated or salvaged materials, most of Bob's houses are inhabited by Mexican free-tailed bats and Yuma myotis (*Myotis yumanensis*), with some pallid bats (*Antrozous pallidus*). Out of 44 houses monitored in 2001 and 2002, 28 (64 percent) were inhabited by more than 3,600 bats.

One of Bob's most interesting projects involves a dam at the Pardee Reservoir, 35 miles (56 kilometers) southeast of Sacramento. The East Bay Municipal Utility District (EBMUD) approached Bob in the summer of 1995 about building houses for bats that were going to be excluded from the dam's interior. He first considered simply installing standard bat houses in one of the 16 concrete spillway tunnels. But the more he considered the situation, the more he wanted to try something new.

So that September, Bob and EBMUD employees converted one of the 10 x 10 x 10-foot (3 x 3 x 3-meter) tunnels into a bat roost. They mounted four modules, each 10 inches (25.4 centimeters) tall and 60 inches (1.5 meters) wide and made from rough-cut wood, against the ceiling. A fifth module was made from old carpet scraps. To enclose the roost, they erected a plywood wall set back from the mouth of the tunnel. They cut a door in the wall for researchers and three 6-inch (15.2-centimeter) by 18-inch (45.7-centimeter) openings for bats (see photo). Bob dubbed the project an "instant bat cave."

The bat exclusion was successful, but no more than five bats had moved into the cave by July 1996. After Bob improved the roost by adding two 12-inch (30.5-centimeter) x 72-inch (1.8-meter) roosting panels against the concrete walls, he counted 75 to 100 free-tailed bats that December. Next, he doubled the height of one of the ceiling modules and installed additional plywood panels on the walls, since the panels were outperforming the modules. In March 1998, he added another 20-inch (50.8-centimeter) module to the ceiling and attached additional carpet partitions beneath the other modules to reduce light and create taller roost chambers.

Bob's batting average quickly improved, as counts jumped from 550 bats in 1997 to 1,870 in June 1998. That November, 56 gallons (212 liters) of guano were harvested. Although the roost was by then a success, Bob kept making improvements. He noted that bats favored both the taller ceiling modules and the wall panels, so he installed a 24-inch (61-centimeter) Maberry roost module [TBHR, Spring 1999] against the ceiling and front wall and replaced all the old carpet with new carpet scraps. "The carpet panels worked really well," he says, "but one"
Bob WiseCarver's very first bat house sits inside a concrete-block silo on a farm near Lodi, California. Up to 300 Mexican free-tailed bats occupy the house, entering and exiting through a window-like opening near the top of the silo. What's remarkable about this bat house is that bats continue to use it despite a Barn Owl regularly perching on it. Owl pellets (castings that contain the undigested bones, feathers, and fur of prey) litter the silo floor, but Bob has only found one bat skull so far. Barn Owls mostly eat rodents, but they also like bats.

The bats in the silo apparently don't feel threatened enough by the owl to abandon their roost, as the bats did at Pardee Reservoir after an owl showed up. In a study of 621 Barn Owl pellets from the Lodi area, Sacramento County Farm Advisor Chuck Ingels and his colleagues found that the most common prey were pocket gophers, voles, and mice, with birds and rats occasionally added to the owls' diet. Bats and other small animals, such as moles, were eaten only rarely in this area.

Two other incidents of owls preying on bats in bat houses have been reported to the Bat House Research Project. One involved a pair of Bob WiseCarver's nursery houses, with 600 to 800 free-tailed bats, near Thornton, California. A Great Horned Owl (Bubo virginianus) has been seen swooping down from atop the utility pole, on which the boxes are mounted to grab a returning bat, take it to the ground, and eat it. So far, this activity has not caused bats to abandon the houses. Pecan growers and Honorary Research Associates Frank and Teresa Bibin in southern Georgia reported a Barn Owl capturing bats emerging from one of their bat houses, but this house was not abandoned, either. The owl was using a tree limb 15 feet (4.5 meters) from the bat house as a hunting perch. After the limb was removed, there were no more problems.

The lesson here is that bats will often return to a bat house even after they've been disturbed by a predator, although it can sometimes take a year or more. Protect your houses as best you can by adding metal predator guards and baffles where appropriate and by locating houses 25 feet (7.6 meters) or more from tree branches or other potential perches for hawks and owls.

Volunteer bat monitor Ken Castleton unexpectedly finds a Barn Owl instead of bats inside the Pardee Dam "bat cave." After the access points were reduced in size, the owl was excluded. More than 2,000 bats returned the following year.

year's worth of bat urine is about all they can stand" before they absolutely must be replaced.

The next year proved to be even better. Based on the 88 gallons (333 liters) of guano collected in 1999, Bob estimated there were 2,938 bats - both free-tailed bats and Yuma myotis. The "cave's" success soon attracted some unwanted attention, however. In April 2000, Bob and volunteers Ken Castleton and Brian Murphy discovered a Barn Owl living in the roost (see photo). They found 15 gallons (57 liters) of bat guano, but all the bats had vanished. To keep the owl out, they put wooden bars over the three openings, reducing the access points to 2 3/8-inch (6-centimeter) slots. The bars kept the owl away, but the roost remained devoid of bats for the rest of that year.

In the meantime, Bob added a new roosting panel in one corner and permanently removed all but one of the old carpet

After bats abandoned the roost in 2000, Bob WiseCarver (right) and Ken Castleton fitted wooden bars over the bats' entrances to make the openings too small for owls to get in. Bats returned en masse the following year.
Thousands of bats roost in the wooden panels and modules mounted on the ceilings and walls of the Pardee "bat cave."

modules. Replacing the urine-soaked carpet partitions once a year became "a bit more troublesome than it was worth," he says. "Driving around with them in the back of my vehicle was not much fun, either."

The bats returned in February 2001. Based on the 75 gallons (284 liters) of guano recovered, Bob estimates 2,500 bats stayed in the cave that year, "Not bad for first year of recovery." The dam has 15 other spillways, so this project could easily be expanded. Bob would love to have volunteers monitor and study the bats; he figures this would make a great research project for local college students. Both the exclusion and the spillway roost have been incredibly successful, with thousands of bats now calling the instant bat cave their home. We congratulate Bob, Ken, Brian, and the East Bay Municipal Utility District for their hard work on behalf of bats.

This 84-year-old bat tower in Comfort, Texas, is still being used by Mexican free-tailed bats and cave myotis. Only three of the 16 towers designed by Dr. Charles Campbell survive.

**DR. CHARLES CAMPBELL: BAT HOUSE PIONEER**

*Mark Kiser*

The first known bat houses were built exactly a century ago. In his 1925 book, *Bats, Mosquitoes, and Dollars*, Dr. Charles A. Campbell, a physician in San Antonio, Texas, described his decades of work designing and testing artificial bat roosts to combat malaria-spreading mosquitoes. While his claims that bats eliminated malaria from the Mitchell Lake area near San Antonio are open to debate [*BATS, Summer 1989*], Dr. Campbell proved for the first time that bats can be attracted to artificial roosts.

By studying bats' natural roosts, Dr. Campbell contended, he could "build a home for bats in a scientific manner to meet the requirements of their most singular habits." He quickly discovered, however, that this was no easy task. Although details of his earliest bat houses are not given, he reports that "quite a number of boxes of different sizes and construction were lined [with cheese cloth saturated with bat guano from a nearby cave] and placed on trees in different localities" around San Antonio in 1902. Boxes were also placed in old buildings, under bridges, and in large warehouses and stables. Although bats did
move into two boxes placed in a stable, Dr. Campbell considered his first round of experiments "a most dismal failure." He concluded that bats preferred larger structures where they could roost high above the ground, and he set to work designing a new type of roost: a "bat tower."

With $500.00 of his own money, Dr. Campbell built his first bat tower in 1909 at the United States Experiment Farm near San Antonio. The pyramid-shaped tower itself was approximately 20 feet (6.1 meters) tall and mounted on four stout posts about 10 feet (3 meters) high. The roost was 12 feet (3.7 meters) square at the base and about 6 feet (1.8 meters) square at the top. Inside, a series of inclined roosting "shelves" that ran the height of the tower were designed to shunt guano into a central chamber where it would collect in a hopper. "Seeing room for improvement," he modified the tower inside and out in 1910, but no bats ever came. The tower, which attracted only exotic House Sparrows, was eventually dismantled and sold for scrap.

Rather than giving up, Dr. Campbell closed his medical practice so he could devote all his time to studying bats. After comparing Texas caves that were favored versus ignored by bats, he concluded that one of the biggest flaws of his original tower was its location. In April 1911, he built a new and improved roost at Mitchell Lake, 10 miles (16 kilometers) south of San Antonio, where mosquitoes were abundant. Less than three months later, free-tailed bats had moved into his "Malaria-Eradicating, Guano-Producing Bat Roost." Estimates of bats in the roost ranged from thousands to hundreds of thousands, and 4,000 to 4,558 pounds (1,814 to 2,067 kilograms) of bat guano were removed each year from 1918 to 1923. A viewing area was added to handle the spectators who came to watch the bats emerge from the tower. Bats kept using the tower long after Dr. Campbell's death in 1931, and an heir received royalty checks from guano sales until at least 1948. Sadly, the historic Mitchell Lake roost no longer exists.

Only three of the 16 Campbell towers built in the U.S. and Italy still survive, two on private land in Texas and one in Florida. Some of the towers were vandalized or burned in the 1950s, during a period of rabies hysteria, while others apparently succumbed to age. A tower owned by the Steves family in Comfort, Texas, was restored in the late 1980s and is still used by small numbers of cave myotis (Myotis velifer) and Mexican free-tailed bats during migration and as a night roost in summer. Built in 1918, it is a registered landmark with the Texas Historical Commission. Hidden by trees and overgrowth, the bat tower in Orange, Texas, is largely forgotten and badly deteriorated, but might be restored in the near future.

The third tower, and the only one accessible to the public, is on Sugarloaf Key, Florida. Built for R.C. Perley in 1929, it was stocked with bats imported from Texas or Cuba (accounts vary). Those bats promptly flew away and the tower never actually attracted any new bats. It is, nonetheless, a well-known tourist destination and a registered National Historical Landmark.

While many of Dr. Campbell's claims in Bats, Mosquitoes, and Dollars were controversial, his work with artificial roosts sparked interest around the world. One hundred years later, Dr. Campbell's contributions to bat house research endure.

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TRIPLE-WIDE UPDATE

Mark Kiser

Research Associates across the U.S. and the Cayman Islands are reporting excellent results with triple-wide nursery houses [TBHR, Spring 1998]. A back-to-back pair of these four-chambered, 4-foot-wide (1.2-meter) houses installed high up on poles can potentially shelter up to 1,800 free-tailed bats and more than 2,000 little brown bats. The relatively low cost (about $125 to $150 in materials per pair, excluding poles) makes this an effective option for bat enthusiasts wishing to attract larger colonies.

Deborah Kemmerer of central Florida installed one of the first triple-wide pairs outside her veterinary clinic in September 1998 as replacement homes for free-tailed bats and evening bats (Nycticeius humeralis) displaced from a nearby building. The houses were oriented north/south, painted dark brown, and received seven hours of after-

![Image](https://example.com/image.jpg)

Nearly 900 free-tailed bats used this pair of triple-wide nursery houses at the Bibins' organic pecan orchard in southern Georgia. The Bibins attracted 900 additional bats to their orchard with a second, identical pair.
noon sun per day. The first bats moved in just two months later. In 1999, after Deborah removed crossbeams between the poles, dislodged numerous mud dauber nests, and added predator guards, 30 evening bats used the houses. After a construction crew accidentally toppled the houses in May 2000, Deborah decided to experiment by repainting both houses white and relocating them in full sun all day long. Two months later, 100 evening and free-tailed bats had moved in, although they left that August. Last year, Deborah counted more than 300 bats during the summer, 600 in October, and as many as 800 by year’s end.

In the Cayman Islands, Lois Blumenthal, director of the National Trust’s Bat Conservation Programme, began experimenting with triple-wide houses in 1998 [TBHR, Spring 1999]. With the generous help of Caribbean Utilities Company Ltd., seven triple-wide pairs have been erected to date, all facing east/west. Her houses are usually joined together by enclosing the sides, creating a central space that fits over the top of a utility pole. Lois reported four of these were occupied in 2001 and spring 2002, with three of them having maternity use. Counts of up to 164, 343, 425, and 60 Pallas’ mastiff bats (Molossus molossus) were observed in the four pairs. The houses are painted dark colors, and those facing west seem to be preferred for raising young. Frank and Teresa Bibin have three pairs of dark brown, triple-wide houses facing north/south in their pecan orchard in southern Georgia. Their first pair, erected in March 2000, contained nearly 880 free-tailed bats that fall [TBHR, Fall 2000]. The north house was preferred exclusively at first, but by fall almost as many bats had moved into the south-facing house. The second pair, installed May 10, 2001, first had bats on May 29 and sheltered 1,000 bats by July. By September, Frank counted 1,100 to 1,200 bats in the second pair of houses, with about 600 in the older pair. As with the Bibins’ first triple-wides, only the north house was used at first, but both houses contained roughly equal numbers of bats in the fall. Their third pair was completed in March 2002, and has already been used by more than 500 bats.

**News and Notes**

**Thank You!**

We thank Barry Genzlinger of Chiroptera Cabin Company and Bill and Carole Haber for their generous donations that allowed the Bat House Research Project to buy a Canon EOS-3 Camera. Having a camera specifically for our project will help immensely in documenting our fieldwork.

If you are interested in donating to the project, several items on our wish list will greatly assist our work:

- Canon Off Camera Shoe Adapter (need two) $35 each
- Canon Connecting Cord 300 (need four) $60 each
- Canon TTL Distributor (need two) $64 each
- LowePro Photo Trekker (backpack to hold our camera gear) $200

**New Bat House Discussion Web Site**

Research Associate Joe Spencer has created a new chat page just for bat house enthusiasts. The Bat House Forum is a great place for bat house landlords to ask questions and share information. The discussion site is at www.batnic.com.

**Other Triple-wide Successes:**

- J. David Bamberger’s back-to-back triple-wide pair near Johnson City, Texas, was used by 400 or more migrating free-tailed bats in Fall 2000.

- Bob Wisecarver’s seven-chamber triple-wide house was installed in 1999 along the Mokelumne River near Thornton, California, where bats are being temporarily displaced during construction of a new bat-friendly bridge. Approximately 120 to 135 free-tailed bats moved into the house in March 2002.

- Barry Genzlinger of Chiroptera Cabin Company reported success with a black triple-wide pair (combined as one nine-chambered house) that he custom-built for an environmental education center. Installed in July 2001 near Burlington, Vermont, the house attracted 15 little brown myotis within a month, and they stayed through September. Exclusion at a nearby building had not yet been completed, so he expects more bats to use this house in 2002.

**Build Your Own Triple Wide**

If you’d like to build your own triple-wide pair, a materials list and sawing diagram are available from BCI (contact Mark Kiser at mkiser@batcon.org or 512-327-9721, ext. 45).

If you’d rather purchase a ready-made model, certified “Bat Approved” triple-wide and other large houses are available from Pebble Hill Grove 229-775-3347, Maberry Centre Bat Homes 903-645-2028, Bat Conservation and Management 717-795-7527, and Chiroptera Cabin Company 802-951-2501.
It's okay to be a fly-by-night operation...
...as long as it's every night

MAKE A BEQUEST to Bat Conservation International, and become a part of BCI's Legacy Circle helping ensure the enjoyment and benefits of bats for generations to come.

TO FIND OUT MORE about the numerous ways you can create a lasting legacy, contact Denise Meikel, Development Director, at 512.327.9721, or email us at dmeikel@batcon.org.

Help keep the night skies filled forever.

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