

Backyard Bats
Acker, Elaine

With test sites throughout the United States, Canada, and the Caribbean islands, BCI staff and volunteers have uncovered many of the finer points of attracting bats to our backyards . . .

By Elaine Acker

Red circles and black stars cover the map on the computer screen. Scattered among the cities, national forests, and historic places are some of BCI's most strategic landmarks—the sites of bat houses tested by some 5,000 Research Associates who have participated in the North American Bat House Research Project. Since 1993, we have worked with an active network of volunteer Research Associates, from homeowners and educators to engineers and biologists, testing bat preferences in a wide variety of habitats throughout North America and beyond.

Like many others, Bill Holloway, who lives in Zwolle, Louisiana, near Toledo Bend Reservoir, discovered that success sometimes requires experimentation. His first attempts began in 1994 with two unpainted houses mounted high on pine trees. Several flying squirrels enjoyed the houses, but no bats. After becoming a Research Associate and receiving *The Bat House Builder's Handbook* in early 1996, he promptly painted both houses a medium-brown color and repositioned them back-to-back on a 23-foot pole in a sunny location. Five bats moved in that July, and by summer 1997, the colony had grown to 58.

While experimentation was once a prerequisite, thanks to the knowledge we've gained through Research Associates' collaboration, it is now far easier for almost anyone to enjoy success with bat houses by simply following instructions. Today, Holloway has seven houses on poles, with six placed in back-to-back pairs, and they are occupied by more than 1,000 Mexican free-tailed bats (*Tadarida brasiliensis*) and big brown bats (*Eptesicus fuscus*). "Next," he says, "I'm thinking about building a bat condo, about four by six feet, that I can enlarge as the colony grows." His friends and family call him eccentric, but he simply responds, "I'm retired, and I'm having a ball."

Holloway and hundreds of other Research Associates reported on 778 houses in 1998. According to Project Coordinator Mark Kiser, approximately 100,000 bats of 11 species occupied 445 of these houses (close to 80,000 in special, extra-large houses) in 31 U.S. states, Puerto Rico, three Canadian provinces, and the Cayman Islands. The most frequent users were big brown bats, little brown bats (*Myotis lucifugus*), and Mexican free-tailed bats.

Like humans, bats tend to avoid houses built with poor materials or faulty construction techniques," explains Project Assistant Selena Kiser. In 1998, BCI began evaluating and certifying commercial bat houses for manufacturers whose products meet BCI's building and instruction standards. Approved manufacturers offer thorough instructions on placement, use durable wood or plastic materials, rely on screws instead of nails, match the

pieces carefully, and provide approximately 3/4-inch crevices. They also take care to caulk their houses against leaks and avoid use of sharp, exposed objects that can injure bats. (Finished bat houses are available for purchase from BCI, and a list of approved manufacturers is posted on BCI's web site at www.batcon.org/bhra/bhratop.html.)

Each bat house should be painted with at least three coats of outdoor paint before installation. Those who build their own houses often additionally paint or stain the inside of the house a dark brown or black color, which can more than double the life of the house. (Commercial houses are typically unpainted due to prohibitive labor costs.)

Bat house enthusiasts have developed their own lingo over the years to describe a wide variety of house designs. A "nursery" house is usually at least two feet tall and 14 inches wide with three or more roosting crevices, or chambers, which are ideal for raising young. Having several tall chambers allows bats to move between them and up and down to find the temperatures they require through daily and seasonal weather cycles.

Smaller, "single-chamber" bat houses are popular because they are easier to build at home, but these seem to be less effective unless they are mounted directly onto the side of a building, which helps to insulate the bat house. Single-chamber houses may hold up to 50 bats, while "multi-chamber" houses accommodate up to 200 or more and are more likely to be used for rearing young.

Another model, the "rocket box," is a wooden shell that slides over a four-by-four-foot post. This clever design by Research Associates and U.S. Forest Service biologists John MacGregor and Dan Dourson of Kentucky offers the advantages of simple installation and roosting spaces on all four sides. Multiple shells, with appropriate spaces between, can be used to accommodate larger colonies. As with nursery houses, bats can more easily move in response to changing temperature.

Through the cooperative efforts of Research Associates who test these designs and continue to experiment, BCI is able to evaluate findings in a wide variety of habitats and climates to discover the secrets of bat-house success. As a direct result of such information sharing, overall bat-house occupancy has increased from 31% in 1995 to 57% in 1998 (including houses that failed due to inappropriate construction or placement). By 1998, nursery houses that met minimum requirements were achieving 75% success, jumping to 79% when mounted in groups of two or more. Even when mounted alone, such houses achieved 85% success when also located within 50 miles of caves or mines. Occupancy can be within weeks, though many of our greatest successes have taken more than a year, and a few up to three years. Although we cannot thank each Research Associate individually, their contributions are making an enormous difference for bats.

Elaine Acker is Contributing Editor of *BATS*.

SIDE ARTICLE

Bat House Landlords

Ken Glover

**Pest Control Manager, The University of Florida
Gainesville, Florida**

Houses: Custom-built (with design assistance from BCI) extra-large bat house

Species: Mexican free-tailed bats, evening bats (*Nycticeius humeralis*), and southeastern myotis (*Myotis austroriparius*)

When the University of Florida's Athletic Association spent \$20,000 in 1991 to build what would become the world's largest occupied bat house, skeptics outnumbered supporters. "We worked with Marshall Hanks, an exclusion expert from Wisconsin, to exclude bats from our stadium and other campus buildings," says Pest Control Manager Ken Glover. "We needed to relocate the bats living in buildings, but we also wanted to provide a bat house as an alternative habitat."

The university's efforts took three frustrating years, as Glover worked to exclude the bats only to have them move into structures other than his bat house. Finally, a small group of bats became permanent residents in 1994, and in 1995, a maternity colony moved in. The numbers have steadily grown ever since; by 1999, the population was estimated at 75,000 bats. Over the summer season, thousands of people gather nearby to witness the bats' nightly emergence. "With a 'watchable wildlife' site on campus, the community has rallied in support of conservation," says Glover. "It's been a very good opportunity to educate the public and dispel the myths and fears about bats."

Recently, when the university considered developing the land where the bat house is situated, more than 20,000 people petitioned the Florida governor's office in favor of preserving the bat house. Says Glover, "The governor's staff told us that no other incident had generated this much public support."

Baxter and Carol Adams Owners, Love Creek Orchards Medina, Texas

Houses: 10 of assorted designs

Species: Mexican free-tailed bats

For Baxter Adams and his wife, Carol, bats are a "serious thing." "We're in the fruit business and own an apple orchard," explains Adams. "Larvae from the codling moth have been found in the Texas Hill Country, and can cause severe damage in orchards. Bats are natural enemies of moths, which are night fliers. We haven't had to use insecticides in several years. I like that, and so do our customers."

The first bat house was installed near the Adams' home, providing an alternative roost for bats that had taken up residence in recessed light fixtures. A year after the house went up, it was full, and the Adamses have been adding new houses ever since. "We have hundreds of bats," says Adams. "Last summer, Japanese public television visited us and stayed late, filming the bats as they swooped in and out of the orchard." Bats and bat houses are providing not only insect control, but education and entertainment.

"Bats are a good topic of conversation," he says, "and every time someone visits the orchard, they also learn about bats. One of the most common questions people ask is whether the bats get in our home. The answer is yes, they get in a lot, especially since our bug populations are so low that we tend to leave our screen door open. But they don't hurt anything. We turn off the lights, open the doors, and wait. It works like a charm, and they find their own way out."

Mike and Andrea Patterson
Caretakers, Grant B. Culley Jr. Foundation
Quadra Island, British Columbia

Houses: 13 of assorted designs

Species: little brown bats

When the Grant B. Culley, Jr., family found bats in their buildings, they saw an opportunity rather than a problem. "Our foundation does ecological studies on whales, wolves, and other species," explains Mike Patterson. "So when we needed our bats to move, I decided to make it part of a new project." Patterson contacted BCI and started installing bat houses in 1998. The bats began occupying them within four months.

"The foundation is testing quite an array of designs," says Patterson, whose houses range from traditional nursery houses to rocket boxes. "The two newest houses attracted 25 bats in just a week and a half." Combined, the foundation's 13 houses provide homes for an estimated 500 to 600 bats.

"I've enjoyed the educational process," Patterson continues. "The houses help educate the kids, adults, professors, and scientists who use the facility. Most people don't know a lot about bats, and everyone loves seeing them. Anyone who's interested in bats should try it. You can build your own for next to nothing, and it's worthwhile."

Cal Butchkoski
Nongame Biologist
Pennsylvania Game Commission Petersburg, Pennsylvania

Houses: 100+ throughout Pennsylvania

Species: big brown bats, little brown bats, and northern long-eared bats (*Myotis septentrionalis*)

Cal Butchkoski, a biologist with the Pennsylvania Game Commission, is concerned about the number of bats "being sealed out of buildings." "Property owners who exclude bats without installing bat houses are not solving problems," he says, "but rather giving their problems to their neighbors." Butchkoski has coordinated with property owners across the state who have chosen to install bat houses as alternate roosts, and his database now includes more than 100 houses.

Butchkoski was the first Research Associate to add vents to his houses, a feature now recommended in *The Bat House Builder's Handbook*. He also modified BCI's nursery style designs to slightly larger dimensions, making it possible to accommodate larger numbers of bats. "We carefully monitor these boxes to discover and solve any problems," he says. "Right now, when a Pennsylvania property owner does an exclusion involving little brown bats, the bat house occupancy success rate is 95%." Butchkoski's overall success rate is 91%.

Pennsylvania's colonies are increasingly concentrated into fewer and fewer buildings. "Large colonies like to stay together, so we're beginning to build and install bat condos—eight-foot-square boxes on posts, about eight feet tall, and 10 to 12 feet off the ground with about 80 sheets of plywood forming roosting crevices. Some of these artificial

roosts now house growing colonies of more than 1,000 bats. It's a community approach to bat management.

Frank and Teresa Bibin
Owners, Bibin Pecans
Quitman, Georgia

Houses: One stand-alone nursery house, and a pair of nursery houses mounted back-to-back

Species: Mexican free-tailed bats

Frank Bibin owns Bibin Pecans, a 27-acre organic orchard in south-central Georgia. "I picked up a brochure on BCI, and what immediately caught my eye was the use of bats for biological insect control," he says. "We use no chemicals or pesticides. We're basically trying to rebuild the natural ecosystem to enhance it for our crops."

Bibin promptly built a small nursery house but waited two years before experiencing success. "We had to be patient, but once the bats started moving in, the first house filled up quickly," says Bibin. "We've got about 600 bats now, and we even have neighbors who stop by in the evening to watch the bats fly."

Bibin plans to add larger roosting boxes that will hold 1,600 to 1,800 bats each. "Once we get those numbers, I believe we'll really see a difference as far as pest insects," he explains. "Most of the insect pests on pecans are caterpillars—the larval stage of moths such as hickory shuckworms and at least a half-dozen others. The bats are going after the moths and our crop pests have already dropped off dramatically. I would tell other growers to try it—it works without a doubt."

Laura Finn
Founder, Fly By Night, Inc.
Deltona, Florida

Houses: 100+, primarily in Florida

Species: Mexican free-tailed bats, evening bats, and southeastern myotis

Laura Finn, founder of Fly by Night, Inc., a nonprofit organization that provides educational programs, field surveys, exclusions, and bat house research, says she has "bat houses all over the place."

BCI funded Finn's master's degree research on bat houses, which included testing of more than 50. She now has over 100, from Florida to Georgia and Alabama. Finn's overall success rate has climbed from 30% in 1997 to approximately 65% in 1999. For houses installed in conjunction with exclusion of bats from buildings, however, her occupancy rate is greater than 90%.

Exclusions are one of Finn's least favorite, yet most important, responsibilities. "I hate having to force bats out of their homes in buildings, but if we do it, we at least can ensure they have new places to live," she says. At one apartment complex where Finn was asked to relocate bats into a bat house, the residents ended up liking them so much that they requested a second bat house.

Finn advises other bat-house enthusiasts not only to choose a good design, but also to make sure the house is placed where bats will accept it. □ The perfect house on the trunk of a tree won't work, □ she explains. □ A crummy house on a pole won't work either. Choose a good house, and make sure you have good placement. Then be patient; it will be there when the bats need it. □

SIDEBAR

If you would like to experience the thrill of hosting your own bats, sharing in the latest innovations, and helping your neighborhood, contact Mark or Selena Kiser at (512) 327-9721, extension 45, about becoming a Research Associate in the North American Bat House Research Project. You can also sign up on the BCI web site at www.batcon.org/bhra/bhratop.html or toll-free at 1-800-538-BATS. By e-mail, you can reach Mark or Selena at mkiser@batcon.org or skiser@batcon.org.

As a Research Associate, you will receive the latest, revised edition of *The Bat House Builder's Handbook* and our biannual newsletter, *The Bat House Researcher*, both of which advise on house design, painting, placement, and maintenance. You will also have opportunities to exchange information and gain helpful advice from Mark and Selena and fellow project participants.

Whether you join us as a Research Associate, or simply choose to add a bat house to your backyard, visit BCI's online catalog at www.batcon.org. Ready-built wooden and plastic houses are available, or you can obtain bat house plans by ordering *The Bat House Builder's Handbook*. Do-it-yourselfers can customize the houses and paint them both inside and out so they will last for many seasons to come.

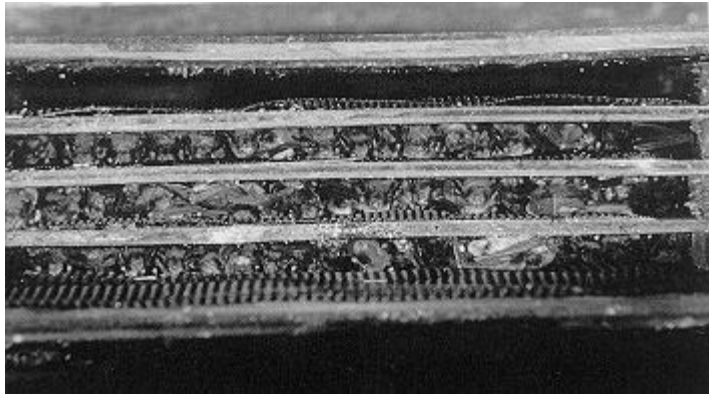
CAPTIONS



Above: The map shows the locations of all houses reported in 1998. Stars represent sites with one or more houses occupied by bats.



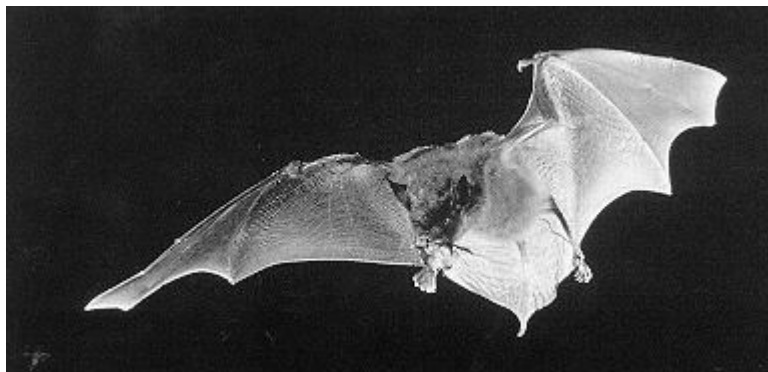
Mexican free-tailed bats return at dawn to two of Bill Holloway's bat houses in Louisiana. As natural roost sites are lost through habitat destruction and human disturbance, bats are increasingly dependent upon man-made structures.



A maternity colony of several hundred bats raised young in this back-to-back pair of nursery houses last summer on Quadra Island in British Columbia. The houses had been installed the previous year and attracted about 50 bats within four months.



Project Coordinator Mark Kiser installs data loggers inside bat house roosting chambers to measure differences in temperature between wooden and plastic nursery houses. Thanks to this convenient test site at the Austin, Texas, home of Research Associate John Scanlan, we can compare the effect of design, material, or exterior color on temperature.



Big brown bats are among the most frequent users of bat houses and are exceptionally

valuable consumers of crop and yard pests.



Retired Texas Highway Patrol officer Marvin Maberry has worked closely with BCI staff to develop innovative new bat house designs, including a plastic nursery house that was one of the first approved in BCI's certification program (available in BCI's catalog).



The evening emergence of bats from the University of Florida bat house is a popular tourist attraction.



One year after this back-to-back pair of bat houses had been installed at the Adams orchards, more than 200 bats came to roost.



Mike Patterson checks a house where a nursery colony raised its pups last summer. Female bats were attracted to the warm, black house, while bachelors occupied the cooler, brown houses to the left, illustrating the importance of offering a range of temperatures.



Cal Butchkoski explains the design features of his Canoe Creek State Park bat "condo" to participants of a BCI Bat Conservation and Management Workshop.



Thanks to carefully placed bat houses, the Bibins have fewer pests in their orchards and vegetable garden.



BCI recommends placing houses at least 12 feet above ground. Laura Finn often places her houses as high as 20 feet, which helps protect bats from predators and offers a spacious flight path. The large patch of guano on the ground under this house clearly shows it has been accepted by bats.

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