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Bats: A Farmer's Best Friend

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by Mari Murphy

Bird Haven is a very special 219-acre organic farm in Oregon's Willamette Valley. With cherry orchards, vegetable crops, flower gardens, meadows, woods, a wide river, and several small ponds, it provides mixed habitat for a variety of wildlife. Each spring and summer it attracts some 54 species of birds and a growing colony of little brown bats (*Myotis lucifugus*), all thanks to the vision of Tony and Betty Koch.

About 25 years ago Tony Koch became concerned about the amount of pesticides he was using on his orchards and decided to experiment with attracting more insect-eating wildlife instead. He began building nesting boxes for birds and his success encouraged him to keep building. Today, with over 800 boxes, the abundant birds have become a magnet for birdwatchers, and he has all but eliminated pesticide use.

Koch decided some 12 years ago to try his luck with attracting bats as well. Although a few bats roosted under the shingles of his barn, they had never been present in great numbers. He noticed that they chased the variety of moths that appeared after dark when the birds had bedded down for the night. Since his organic corn crop had a serious earworm problem, Koch wondered if having more bats around might help.

To attract them, he built three large bat houses of the same open-bottom design, but placed them in different locations. One went up on an oak tree, one on a post at the edge of the woods, and one on the outside of his barn, all about 10 to 12 feet from the ground and all facing east. The houses were made of rough cedar, about 2 feet high by 3 feet wide and 5 inches deep, with both 3/4-inch and 2-1/2-inch crevices. They were unoccupied until the third spring when Koch discovered five bats in the house on the pole and three in the one on the barn. (The house on the oak tree was never used.)

When bats returned the following seasons, but in no greater numbers, Koch decided to modify his bat house design. He wanted to attract more than just a few bats, and the larger crevices had drawn only wasps. Using cedar from the same batch of wood he had bought several years before, now well-aged, Koch set about designing a better house.

This time he built a smaller box two feet high by one foot wide and about 9 inches deep with 3/4-inch crevices only. He added a 1/2-inch attic space to trap warm air and painted the outside black to help heat the house faster. He took down the three original designs and in February 1985 placed the new house on a pole next to a 30-acre woodlot then recently planted with Douglas fir. When the bats returned a few months later in April, they occupied the new house. By June they had had nine pups, leaving their young in the attic while they went out to feed.

Now Koch was really encouraged. Had the aged wood made a difference? Was it the new design? Or was it, as he sometimes believes, sheer luck? Whatever the cause of his success, he began experimenting in earnest. Since he now knew that bats would use a bat house for a nursery, he began thinking of ways to encourage greater numbers and to provide a more friendly environment for nursing mothers. He built several more houses using the aged wood and painting them dark. His bat colony gradually increased as they moved into the new houses.

But Koch still wasn't satisfied that he had created the perfect environment for a nursery colony. He decided to try placing bat houses directly in the loft of his huge barn. With an attic spanning 80 feet and a metal roof absorbing plenty of heat, Koch thought that the barn should be ideal for mother bats.

He hung the first nursery box from the loft beam, about 10 feet above the floor, rigging it on a pulley with a second rope attached to tip the house forward about 10 degrees. The pups had tended to fall out of the other boxes after a week and a half, when they began venturing down from the attic. If the partitions were slightly slanted, he reasoned, babies might have a chance to scramble back up. Since the loft was warm in the summer, he built this house with open sides and five 3/4-inch crevices. The new nursery house went up inside the barn in February and was occupied that May. He noted fewer infant casualties with the new tilted design and added several more to the loft.

After years of experimentation and observation, Koch today has four different bat house designs on the outside of the barn, nine nursery boxes inside, and eight boxes on wooden posts around the fir tree lot. His designs are all similar to BCI's open-bottom models, but are of varied sizes, ranging from 15 inches high by 11 inches wide by 6 inches deep to the largest house, which is two feet high by 30 inches wide and 6-3/4 inches deep. All of the outside houses face east and receive more than six hours of sunshine each day. Koch builds his houses from exterior plywood with cedar slots and now treats the inside with a mixture of bat guano thinned with water. All 21 of his current houses are eventually occupied each year, and all were used by the first or second season.

Each year when the bats arrive around April 1, they follow a regular pattern. First they fill the four houses on the side of the barn, some also roosting in those at the edge of the woodlot. By the middle of May, the houses on the outside of the barn are vacated when about 300 mother bats move to the nursery boxes inside. Bachelors then move out into the woodlot houses.

In June young bats are born in the nursery boxes. Koch observes that mothers move among the nine boxes, usually occupying no more than two or three at a time, but eventually moving into all during the course of the summer. He notes that mothers often roost alone in one box, keeping their pups in a separate nursery. Sometimes mothers move the babies during the night to another house. Speculating that the move may have been made because of parasite or urine accumulation, Koch lowers the abandoned house on the pulley, cleans it, and puts it back up for the bats to use again.

Koch also noticed that in the heat of summer, the bats often congregate at the bottom of the nursery boxes where it is cooler. So he uses electric fans to cool the loft. When it seems too hot, he turns on the fans, watching the tiny bat faces peeking out from between the slats, jockeying for the best position, their fur blowing in the cooling breeze. Once the pups begin to fly, mothers and young begin moving back to the houses on the outside of the barn. By the end of August, bats are in all of the outside houses and sometimes even the bird boxes. Koch maintains that the few found in bird boxes are merely juveniles that don't know any better. This past season, he estimated that he had about 600 bats, the population approximately doubling each of the last five years. Koch figures that the larger the colony becomes, the greater the need for additional roosting space.

The multitudes of birds and the growing colony of bats at Bird Haven have taken care of Tony Koch's original concern about overuse of pesticides in his orchards; he has gone from spraying 13 times a year to only twice after the birds and bats have gone. Koch's hunch about bats helping with his corn earworm problem has also paid off.* Where he used to have one to four of the destructive moth larvae on an average ear of corn, he has had none for the last several years□ ever since his bat population began increasing.

(Bio)

Mari Murphy is editor of BATS. Special thanks to BCI member Robin Michal Koontz who interviewed Tony Koch for this article. She lives in Oregon and writes and illustrates children's books.

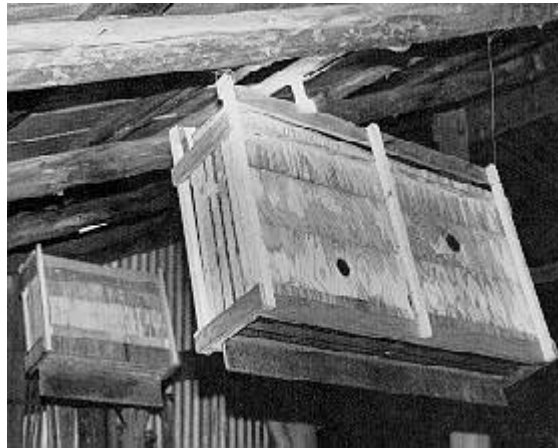
(Footnote 1)

* John Whitaker's analysis of the nursery colony feces revealed a diet of Diptera (true flies, such as midges,

crane flies, and mosquitoes) and small Lepidoptera (moths). Positively identifying individual species, such as *Heliothis armigera*, the moth that produces the corn earworm or bollworm, is not possible from a fecal analysis.



Tony Koch makes a point to a group of visitors who have come to learn how he solved his insect pest problems by attracting bats and birds to his farm.



Koch put up nine special bat houses in the loft of his barn to create a more hospitable environment for nursing mother bats. These unusual houses have open sides because of the warmth of the loft. Mother bats routinely move their pups from house to house, perhaps to escape parasites or guano accumulation.

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