Note to Research Associates

We are delighted to report that Bat Conservation International's North American Bat House Research Project is off to a good start. Nearly 800 Research Associates are participating in 47 states in the United States, two provinces in Canada, and Belize and Trinidad.

This is the first of our anticipated twice-a-year project newsletters. In this issue, we are sharing enlightening experiences from the past summer. The Spring newsletter will provide a more detailed summary of findings, based on fall reporting, and will suggest any indicated modifications in time for the new season of testing.

Please remember to submit your data report forms before the end of the year, regardless of success. All of your reports are significant and vital to our understanding of bat needs in artificial roosts, so please participate; we need you!

Successful Bat Houses
Shed Light On Bat Needs

Over the past summer we received 51 reports, mostly regarding bat houses that already had been installed prior to inception of the new research project. These were small houses, typically put up with minimal or no instruction. Results strongly support the conclusions published in BCI's Bat House Builder's Handbook.

Five houses in Maryland, Wisconsin, and New York that received sun for 8 to 12 or more hours daily were all occupied. Three of these were either painted dark or were covered with tar paper. The two that were left a natural wood color received 12 or more hours of sun. Four of the occupied houses were within a quarter mile of water, but one located between one and two miles from water attracted a small bachelor colony. The only nursery colony was located less than a quarter mile from the Potomac River and a small stream.

Twenty-two bat houses in other northern locations received less than four hours of daily sun, and none of them were occupied, clearly confirming the vital role of solar heating. Even in the South, only one of 11 occupied houses received less than four hours of daily sun, while nine that received little or no sun were unoccupied. The only exception was reported by Ernie Stevens from central Florida. His occupied bat house was hung in complete shade from a tree limb. Six bats were first noticed using it in January of 1993. The colony grew to 125 and reared young in spring, then departed in July.

In central Georgia, Ronald Spears put up four bat houses. Three that are shaded are unoccupied, while one in full sun on a utility pole in a corn field has bats. The house exposed to sun was used by 12 big brown bats (Eptesicus fuscus). Spears recorded an internal air temperature of 136°F midway between top and bottom of the 18-inch-tall house while the bats were roosting just inside the open bottom at 2 P.M. This indicates a greater tolerance for heat than expected.

Further evidence that bats need high temperatures in bat houses comes from Lisa Williams' continuing work in Pennsylvania. She recorded temperatures as high as 95°F for nursery colonies of big brown bats (Eptesicus fuscus) and 106°F for little brown bats (Myotis lucifugus). Her newest houses provide vertical ventilation slots one-half inch wide by three inches long on each side, beginning six inches from the bottom of the rear roosting chamber. During extreme heat, bats roosted...
between the ventilation slots and the open bottom.

In central Texas, David Bamberger mounted two of the large insulated nursery houses (Model 9) recommended in The Bat House Builder's Handbook back-to-back, a few inches apart, 18 feet up on a metal pole near a small lake on his ranch. A colony of approximately 30 cave myotis (Myotis velifer) moved in within two months. The east-facing house was painted dark brown and the western one white. On September 9, at 10 A.M., when the ambient temperature was 89°F, the bats were in the house facing west, which was largely shaded by the house facing east. They were occupying crevices with temperatures of 99°F to 101°F. At 5 P.M. on the same day, when the ambient temperature was 98°F, the houses were rechecked. The bats had moved to the east-facing house where temperatures ranged from 102°F to 104°F. At that time the temperature where they had roosted in the morning was 115°F. The advantage of placing pairs of houses back-to-back, facing east and west, is obvious. Two mostly shaded houses in similar habitat on the same ranch attracted only five bats (M. velifer and Tadarida brasiliensis).

Sunny Sanders, also from central Texas, placed a single multi-chambered bat house (Model 5) just below the apex of a tin roof on the west end of her house, where it was shaded all day. It remained unoccupied for five years. In June 1993 she reported her failure to BCI. We advised her to relocate it where it would receive at least some morning sun, so she moved the house to the east end of her home, again positioning it just below the apex of her roof. This time it received at least four hours of morning sun, and by mid-August approximately 300 Mexican freetailed bats (T. brasiliensis) had moved in. In fact, there were so many that dozens could not get in. This illustrates the importance of proper location relative to solar exposure and further indicates that even southern bat houses may need more sun than previously understood.

Motorola Corporation Participates in Research

BOB JONES, Head of Operations for Motorola's semiconductor plant in Austin, Texas, has initiated an ongoing research partnership with BCI to develop bat house designs for hot southern climates. During July, August, and September, 15 Motorola employees, headed by Fred Blackman, Toni Lowe, Glen Schneider, and Gwen Turner, worked with Donna Hensley of BCI, building, modifying, and testing BCI's new nursery house designs. They tested a variety of heat-sink and insulation materials, monitoring each roosting chamber of houses with different treatments and solar exposures throughout 24-hour cycles.

After extensive testing, the team built two of the large BCI nursery houses (Model 9), using red cedar exteriors and plywood partitions. The cedar weighs less than plywood, will last longer, and provides greater temperature stability. The exterior was treated with an oil-based sealant and left its natural cedar color. The rough side of the wood was used on the exterior of the house to facilitate landings of returning bats. Interior partitions were covered with fiberglass netting and three layers of our recommended Reflectix insulation were used in the attic and from top to bottom in the front and rear chambers.

A sloping half-bottom was added, which reduces heat loss from the front two chambers. The front of the house was lengthened at the bottom by one inch to allow for crawl space from the back to the front crevices. The two houses were then attached to each other, back-to-back to enable heat exchange and greater thermal efficiency. This central Texas bat house remained vacant for five years until it was moved only a few yards to receive several hours of morning sun. Soon after the move, so many bats attempted to move in that there was not enough room for them all.

PHOTO: DONNA HENSLEY
consistency. Finally, a single tin roof with a four-inch overhang was attached one inch above the wooden roofs to protect the houses from potentially excessive midday heat.

At an external temperature of 106°F, interior temperatures ranged from 90° to 99°F. On September 9, the first prototype houses were hung 25 feet up on a metal pole on Steve and Marianne Sprinkel's organic farm near Austin. When first checked for occupancy six days later, six cave myotis had moved in. Although the first pair of houses attracted bats, we suspect that higher temperatures, combined with ventilation slots, will be preferred.

This winter, the Motorola team anticipates building and placing 14 additional pairs of the large nursery houses, three at Motorola headquarters, and the remainder at additional organic farms in the Austin area. Houses will be tested with and without bottoms and insulation, ventilated and unventilated, and with different colored exteriors to better determine bat preferences.

Motorola and BCI have been congratulated by Texas Governor Ann Richards for their cooperative efforts in conservation. Team spirits are high, and by the end of next summer, we should know a great deal more about how to accommodate bats in hot climates, thanks to the dedication of our friends at Motorola.

**Small Grants Available**

Any member of the North American Bat House Research Project who has successfully attracted a colony of bats to one or more bat houses is eligible to apply for a small grant for further research on bat needs. Those who have achieved the most success on their own will have first priority for the limited funds available. Amounts granted will be justified by the costs of materials required for given experiments and typically will not exceed $200 to $500 per project.

Although all bat house reports contribute to our knowledge of bat needs, by far the most enlightening information will come from controlled experiments at sites where bats are known to need housing. First-year or second-year experiments often require no more than four to six houses, but each must be carefully treated and placed, not just to see what bats will accept, but also to test what they prefer.

The best returns on our small-grants investments will come from slow, methodical testing over several years, beginning small and expanding with success.

Call Project Coordinator Donna Hensley to discuss anticipated projects and to obtain grant application forms. She will be happy to assist you in designing your own experiment according to project needs.

**Reminder to Owners of Unsuccessful Bat Houses**

If after at least one active season, your bat house remains unoccupied, try moving it to a new location where it receives more or less sun. Reports thus far indicate that most successful bat houses are occupied within the first year, and that most failure results from too little exposure to sun. A house that fails at first, but is occupied after a move, may provide especially enlightening information on what local bats need.

If your houses are mounted on poles, try rotating them from a north/south exposure to sun to east/west. Since houses seem to be too cool more often than too warm, this may help. If your houses are insulated and empty, try removing the insulation to permit greater heat gain. You also can try painting
houses a different color, most often darker. Attaching nursery houses back-to-back on poles may reduce extremes of temperature fluctuation. Such houses in the hottest climates may benefit from tin roofs with enough overhang on the east and west sides to reduce solar heating during mid-day. Ventilation slots, like those used by Lisa Williams, are also a good idea.

**Tips to Help Your Bats**

**Recent Observations** from a variety of locations, both north and south, indicate that bats often have difficulty landing on bat houses they wish to enter. Many attempt to land on the outside of a house before climbing in, and some have been seen falling several times before succeeding.

**More Participants Needed**

THE NORTH AMERICAN Bat House Research Project needs more participants, both to meet data collecting needs and to become economically self-sufficient. Please share your enthusiasm with a friend who may wish to join.

*All model numbers referred to in this newsletter are the same as those provided on page 4 of the North American Bat House Research Project Data Report Form.*