

Science Helps the Bluebird

New discoveries about bluebirds may help bring their numbers back



Photos: Michael L. Smith

With the exception of artificial nesting boxes, nearly all bluebird nests are built in dead tree cavities and wooden fence posts.

By JOAN AREHART-TREICHEL

The bluebird—a North American native that many consider beautiful, gentle and even a symbol of love, hope and happiness—is not on the endangered species list. Yet it is much less common than it was a few years ago, bird watchers' observations suggest. And its population decline appears to be due to a number of factors. One of the most important is the disappearance of pastures, hay fields and orchards that provide it with natural cavities for nesting sites. Another major factor is its unsuccessful competition with starlings and sparrows for the few natural nesting sites that remain.

A handful of North American scientists have been attempting during the past few years to learn more about bluebirds in order to help the birds stage a comeback. And they are coming up with some interesting and potentially helpful findings.

For instance, during his 12 years of studying bluebirds, Benedict C. Pinkowski of the Fort Berthold Community College Science Center in New Town, N.D., has found that bluebirds generally prefer short ground cover like pastures, golf courses or lawns to woods. On the other hand, the Eastern bluebird—one of North America's three bluebird species—spends some time in woodland environments as well, Richard Rounds of Brandon University in Brandon, Manitoba, reports. Bluebirds, Pinkowski's studies reveal, also flourish in areas that have been burnt out by forest fires because they provide natural nesting cavities and feeding perches. The Eastern bluebird and the Western bluebird need to sit on perches when feeding, while the

mountain bluebird can eat while simply hovering in the air.

The diet of adult bluebirds, T. David Pitts of the University of Tennessee at Martin has found, includes small fleshy fruits, insects and other small animals, although during abnormally harsh winters they tend to concentrate on fruits. Pitts also studied the foods that parent Eastern bluebirds on a Tennessee farm brought to young in nests. Food items most often delivered were caterpillars, grasshoppers, spiders and crickets. Other tidbits included moths, cherries, horseflies, beetles, millipedes, grubs, earthworms and termites. The largest item flown in was a lizard, which a fully grown nestling promptly swallowed.

Severely cold winters can drastically reduce populations of bluebirds that do not migrate, Pitts has also discovered, and it's presumably because they both deprive the birds of food and lower their body temperatures. Such winters can also decimate populations of bluebirds that do migrate, Pinkowski has found. He studied the effect of the severely cold winter of 1976-77 on bluebirds in southeastern Michigan. Few of the birds he had banded and that had migrated to Florida for the winter returned the following spring, apparently because of the freezing temperatures and snow that extended as far south as Dade County, Fla. Yet the good news, Pitts points out, is that bluebirds appear capable of quickly rebounding from extremely bad winters. Although there was a drastic decline in the bluebird population of Tennessee during the exceptionally cold winters of 1976-77 and 1977-78, the population has completely recovered since then.

But some of the most interesting and potentially important bluebird findings concern artificial nesting boxes, since a scarcity of natural nesting cavities is one of the major reasons for bluebirds' declining numbers and since they'll use artificial boxes provided the boxes meet their requirements. For instance, Pitts will be reporting at a meeting of the Wilson Ornithological Society in Green Bay, Wis., this month that early in the nesting season bluebirds tend to favor small boxes, while later in the season they are apt to prefer large ones. On the other hand, the size of the entrance hole into an artificial box is important to bluebirds, Rounds has observed. They prefer it to be in excess of two inches in diameter, yet will tolerate it if it is as small as one and a half inches wide. This latter diameter is optimal, Rounds explains, because it is large enough to satisfy bluebirds, yet is small enough to keep starlings out.

While investigators have found that the external color of an artificial nesting box makes no difference to bluebirds, Pitts reports that they prefer white to black interiors, perhaps because white provides increased visibility inside the box, or perhaps because white is cooler. Indeed, Rounds studied the internal temperatures of artificial nesting boxes and found that black interiors are hottest, white interiors coolest and natural wood interiors in between, although the presence of a bluebird in a box affects these temperature differences.

Bluebirds, Rounds says, also prefer to nest in boxes that are not under telephone lines because sparrow hawks and pigeon hawks prey on them from the lines. Blue-



Bluebird populations can completely rebound from severe winters in three to four years.



Artificial nesting boxes are helping bring bluebird numbers back. Grasshoppers are among the food items that bluebirds most often deliver to young.



birds also favor boxes that face away from roads rather than toward them. This finding "kind of surprised me," Rounds says, "because I didn't think it would make any difference to them. Apparently they don't like traffic on roads and the dust that the traffic creates." If artificial nesting boxes are put in good bluebird habitat and circular metal guards are attached to nest box poles to inhibit predators, they can increase bluebird numbers. This finding comes from Theodore W. Gutzke, assistant refuge manager at the Great Swamp National Wildlife Refuge in Basking Ridge, N.J.

In 1978 the New Jersey Division of Fish, Game and Shellfisheries conducted a bluebird nesting survey and found only 45 bluebird nesting pairs in the entire state. Similarly, in 1976 Gutzke noted only three bluebird nests on his refuge, although it contained several hundred acres of prime bluebird habitat. So between 1977 and 1979 he erected 100 artificial nesting boxes for bluebirds on such land and found he could increase the number of bluebirds on the refuge. In 1979 the refuge had 18 bluebird nesting pairs, 26 bluebird nests either in artificial nesting boxes or natural nesting cavities and 84 bluebirds fledged from these nests. By 1982 the refuge had the largest bluebird breeding population in New Jersey—30 nesting pairs—in spite of its being only 25 miles from New York City. These birds built 43 nests either in artificial nesting boxes or in natural cavities and successfully raised 140 young.

What's more, Gutzke has had inquiries from some 20 other national wildlife refuges, national parks or national fish hatcheries about establishing a bluebird

management program similar to his, and two such programs have already been set up—one in the Mason Neck Wildlife Refuge in Lorton, Va., and the other in the Montezuma Wildlife Refuge in Seneca Falls, N.Y.

A number of these findings, as well as other bluebird discoveries, are also being applied by the North American Bluebird Society—a quasi-scientific organization headquartered in Silver Spring, Md. The society was founded in 1978 by Lawrence Zeleny, a retired U.S. Department of Agriculture biochemist turned bluebird crusader. Gutzke is research chairman for the organization. Today it has some 4,000 members, many of whom have purchased or built bluebird nesting boxes according to the society's specifications and are maintaining them according to society recommendations. In fact, as Pinkowski points out, some people have set up trails of artificial nesting boxes for bluebirds that extend hundreds of miles. One trail in southern Canada, he says, extends 2,000 miles.

And emerging data suggest that efforts like these are increasing bluebird numbers. For instance, since the Montezuma Wildlife Refuge set up its bluebird management program two years ago, it has had its first bluebird nests in 30 years. According to a report in the April *SIALIA* by Delos C. Dupree, treasurer of the Bluebird Society, 281 people reported to the society last year that they had installed 8,452 artificial nesting boxes for bluebirds, that 3,143 of them were used by bluebirds, and that the boxes yielded 14,499 fledglings. These figures exceeded those reported to the society in 1981. □

A Bluebird Encounter

The SCIENCE NEWS staff usually gets its article ideas from scientific journals, scientific meetings or interviews with scientists. But sometimes it gets its ideas from unconventional sources as well. In this case, the idea came from the bluebird itself.

It all started last spring when I saw a bluebird in my family's backyard in Sherwood Forest, Md. This was the first bluebird I had seen since my childhood in Kentucky a good quarter-century earlier and hence an exhilarating experience for me. Then last summer, a pair of bluebirds lit on our backyard birdbath while we were sitting only a few feet away. After casually taking a drink, they winged away into the dusk. Shortly after, I learned that a Sherwood Forest neighbor had been visited by bluebirds as well.

These encounters prompted me to make some phone calls to determine the bluebird's status in North America. I also found out that an organization called the North American Bluebird Society is trying to increase the bluebird population.

At the same time, I've found myself becoming increasingly impassioned with the bluebird and its fate. I've bought an artificial nesting box from the Bluebird Society and have placed it in our backyard according to the latest scientific specifications. I often examine the box to see whether a bluebird has taken up residence and already have visions of baby bluebirds fledging from it.

— J. A. Treichel