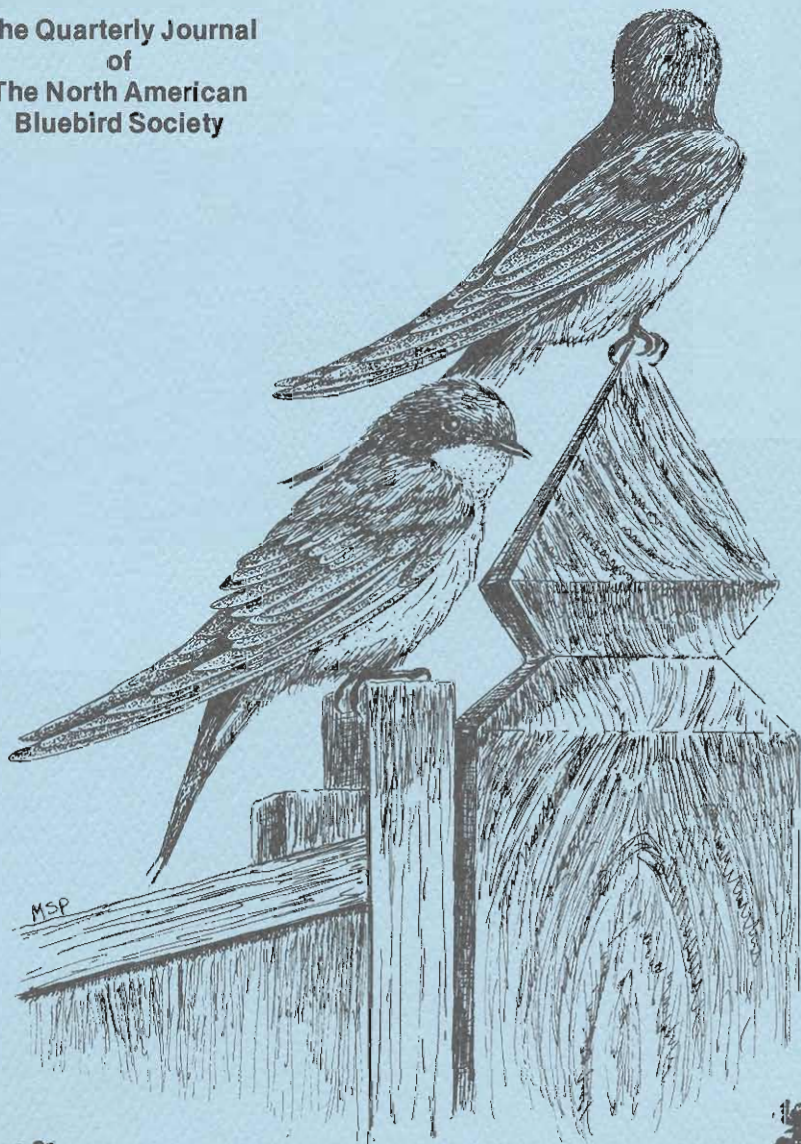


Sialia

Volume 13, Number 1
Winter 1991
Pages 1-40

The Quarterly Journal
of
The North American
Bluebird Society



NORTH AMERICAN BLUEBIRD SOCIETY

Founder

Lawrence Zeleny

President

Sadie Dorber

Vice President

Thomas Tait

Treasurer

Delos Dupree

Recording Secretary

Doug LeVasseur

Corresponding Secretary

Joseph Tait

Directors

Ron Kingston 1991
Virginia

Thomas Matsko 1991
Montana

Myrna Pearman 1991
Alberta

John Rogers 1991
New York

Donna Hagerman 1992
Nevada

J. Douglas Quinn 1992
Massachusetts

Dorene Scriven 1992
Minnesota

John Trott 1992
Virginia

Andre Dion 1993
Quebec

Kenneth Jankowski 1993
Indiana

Alfred Larson 1993
Idaho

Marion Liles 1993
Oklahoma

Executive Director

Mary Janetatos

Editor

Joanne K. Solem

Sialia means bluebirds. Hence the title of this journal. Technically, *sialia* is the Latinized, neuter plural version of the Greek word *sialis*, a noun meaning a "kind of bird." Since the Eastern Bluebird was the first bluebird classified by Carolus Linnaeus (1707-1778), he gave it the species name *sialis*, though he placed it in the genus *Motacilia* which is now reserved for the wagtails. It was William Swainson (1789-1855), who, in 1827, decided that the bluebirds needed a genus of their own within the thrush family (*Turdidae*). He selected the generic name *Sialia* which he simply adapted from the species name *sialis* which Linnaeus had used. Therefore, the scientific name for the Eastern Bluebird is *Sialia sialis* (pronounced see-ahl'-ee-ah see'-ahl-iss). Similarly, the Western Bluebird and Mountain Bluebird, the two other species within the genus, were named *Sialia mexicana* and *Sialia currucoides* (coo-roo-coy-dees) respectively. Their species names are descriptive of their locations. All three bluebird species are native only to the North American continent, although each inhabits different regions generally separated by the Rocky Mountains and by altitudinal preferences.

While the adult birds all show differing plumages, the young of all three species look remarkably alike, prominently displaying spotted breasts and large white eye rings. This similarity in plumage was the principal reason the Society chose the juvenal bluebird for its logo. Since bluebirds almost always choose to raise their young in small enclosed cavities, a young bluebird sitting near a nesting box seemed to symbolize our mission. The hope of any species resides in its young. Because of bluebird nesting preferences, the survival of their young may depend on the nesting box, especially since natural cavities, for a variety of reasons, are disappearing rapidly. The theme of bluebird young nurtured in man-made structures will be a recurring one in our art and literature. We hope that this theme will remind all about the plight of the bluebird, and will stimulate action which will allow this beautiful creature to prosper.

Sialia is published quarterly by the North American Bluebird Society, Box 6295, Silver Spring, MD 20916-6295. Subscription price is included in annual membership dues. Single copies: \$2.50. Write for information about bulk quantities. Checks and money orders should be made payable to North American Bluebird Society and should be in United States funds. Issues are dated Winter, Spring, Summer and Autumn and appear approximately on the fifteenth of January, April, July and October respectively. Deadline for submission of material is three months prior to date of publication; dated items only, two months.



Sialia

The Quarterly Journal
About Bluebirds

Volume 13, Number 1
Winter 1991
Pages 1-40

EDITOR

Joanne K. Solem

CONTRIBUTING

EDITOR

Lawrence Zeleny

ART EDITOR

M. Suzanne Probst

CONTENTS

| | |
|---|----|
| Presidential Points | 2 |
| Sadie Dorber | |
| An Analysis of the Interspecific Competition of Eastern Bluebirds, Tree Swallows, and House Wrens in Delaware State Park, Delaware, Ohio, 1979-1986 | 3 |
| Richard M. Tuttle | |
| Field Tests of the "Bird Guardian" | 4 |
| Kevin L. Berner | |
| Plantings for Bluebirds and Other Wildlife: Mistletoe | 20 |
| Karen Blackburn | |
| Question Corner | 22 |
| Lawrence Zeleny | |
| A Bird in the Bush | 23 |
| Karen Blackburn | |
| Orphans and Foster Parents | 24 |
| Florence Germond | |
| Casper | 25 |
| Robert G. Long, Sr. | |
| Feeding Station for Nestling Bluebirds | 27 |
| George A. Hurst | |
| A Bluebird Success Story | 28 |
| Rita Finlay | |
| Poetry: McDaniel, Bowie | 30 |
| Thirteenth Annual Meeting Report | 31 |
| Mary D. Janetatos | |
| Awards Presented | 33 |
| Sadie Dorber | |
| Bluebird Express | 36 |
| Bluebird Tales | 38 |
| Mary D. Janetatos | |
| Financial Statement | 40 |

COVER

A pair of Tree Swallows on their
nesting box are the subject of Art
Editor M. Suzanne Probst's cover.

Sialia welcomes original articles, art and photographs for publication. Although this journal is named for the bluebird, material relating to all native cavity nesting species will be considered. Manuscripts should be typed neatly and double-spaced. All material submitted is subject to editing or rewriting. Submit the original manuscript plus a duplicate copy if you wish to proof the material before publication. If the article has been submitted elsewhere (or previously published) that fact must be stated at the time of submission. All manuscripts will be acknowledged. Black and white glossy photographs are preferred. Print the subject, names of individuals pictured, photographer and return address on the back of each photograph. Art is welcome and should be in black pen-and-ink. We do not assume responsibility for manuscripts, photographs or art submitted. The editor's address is 10617 Graefloch Road, Laurel, Maryland 20723.

Presidential Points

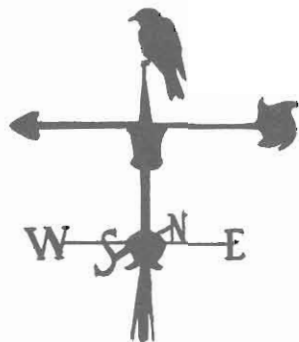
Sadie Dorber

Nearly anything you read about Pennsylvania states that it's where a nation was born and Gettysburg is where a nation was saved. Bluebirders realized the true meaning of this statement, as we gathered in Gettysburg for the Thirteenth Annual Meeting. The many hues of autumn lent their touch, as we learned about the history and heritage of the area. As we toured the battlefield and the guides explained the battle that raged over the area, it was very difficult to believe that it all happened in just a few days.

All of us enjoyed the tour of the Eisenhower Farm; bluebirds were sighted while we walked the trail started by Art Kennell this past spring. It seems only fitting that this beautiful bird be provided nesting boxes at the farm. Their presence will undoubtedly thrill many visitors in years to come.

Sunday morning found many of the bluebirders at Tuscarora Mountain to observe the migrating raptors. Not being very good at identifying those little specks, it was certainly a treat to have a spotter tell you the kind of bird approaching and the exact location in the sky. One of the first things sighted, shortly after our arrival, was a flock of loons. Before long, more loons came into view and then someone spotted cormorants. In between, an occasional Red-tailed Hawk would pass by. Juncos and Golden-crowned Kinglets could be heard in the trees near the viewing area and the spotter said it's not unusual to see bluebirds. I really hadn't expected all those other birds at a hawk watch.

As we were getting ready to leave, 51 Tundra Swans passed over the lookout. Flying quite high, the sun would sometimes make them look like aluminum foil birds. The spotter told us that they had enough daylight left to make Chesapeake Bay by evening. We walked down the path to go back to the car and just as we approached the parking lot, a Snow Bunting was



sighted by Kevin Berner. We all agreed it had been a nice birding morning.

We left the hawk watch and drove to Codorus State Park. One of the Friday field trips had been to the park and everyone had mentioned that it was a scenic location and that they had found bluebirds. We weren't quite so lucky with bluebirds, but we did find pheasants. They are one species that we see very few of in New York.

Harold Greenlee of the Gettysburg National Park was one of the speakers on Saturday's agenda. His topic, "The Vultures of Gettysburg," told us about the large number of vultures that came to the area and fed on the dead horses. To this day, the area still supports a large vulture population. The area of Little Round Top provides a roosting site for the birds and near dusk you can view the Turkey and Black Vultures returning for the night. On Sunday evening we went to Little Round Top to observe the birds' return. We quickly were able to distinguish the difference between the two species and were overjoyed to witness this event. The next morning we returned again to watch the vultures preen and sun themselves before departing for a day spent searching for food. The vultures were mentioned many times on our drive back to New York.

Tubex Tree Shelters

We've received many letters from members alerting us to the danger of bluebirds entering Tubex Trees shelters and not being able to escape. I will discuss this product in my next column and the solution to this problem. ■

An Analysis of the Interspecific Competition of Eastern Bluebirds, Tree Swallows, and House Wrens in Delaware State Park, Delaware, Ohio, 1979-1986

Richard M. Tuttle

This paper was presented at the Tenth Annual Meeting of the North American Bluebird Society on 15 September 1987, Chevy Chase, Maryland. It was revised in 1990.

Introduction

Monitoring and managing a nest box trail for Eastern Bluebirds (*Sialia sialis*) within the breeding range of Tree Swallows (*Tachycineta bicolor*) presents a set of unique management problems, especially when the habitat is also attractive to nesting House Wrens (*Troglodytes aedon*). Since 1979 all three species have competed for nest boxes throughout Delaware State Park (DSP) in central Ohio.

Most North American bluebird conservationists have experienced the frustration of trying to raise bluebirds in spite of House Wrens. Bluebird eggs, pecked and dropped at the foot of the nest box, and sticks added to the grass cup are indications of a wren's visit. To many, Tree Swallows can be as frustrating as wrens: they mob bluebirds, dump bluebird eggs, and, in rare cases, kill bluebird nestlings.

I examined swallow and bluebird interactions by evaluating eight nesting seasons, 1979-86. I soon discovered that conclusions were elusive without including House Wrens. For this reason the first part of this paper examines the relationship between bluebirds and swallows; the second part completes the picture by adding wren data.

I offer this study as a conservationist with an accumulation of over two decades of detailed data (Tuttle 1989). I will use the simplest of statistical techniques to analyze and describe trail relationships clearly in ways that will lead to more effective

conservation practices on our bluebird trails.

Study Area and Trail History

Delaware State Park is four miles (6.4 km) north of Delaware, Ohio, and has been thoroughly described in other studies (Tuttle 1987). The first 16 boxes in the park were mounted on 7 July 1977. Ten boxes were added in 1978, 40 more in 1979, and 27 boxes in 1986 so that 93 boxes were available for the 1980 and 1981 seasons. By 1982, 109 boxes were available including nine that were mounted on traffic signs (Tuttle and Caldwell 1985). Since 1983, there have been between 115 and 117 nest boxes available.

House Wrens have always nested in the park. Wren production peaked in 1980 when 278 fledged. Bluebirds appeared in 1978; one box was used twice to produce eight young. Tree Swallows appeared the following year and raised 29 young from six boxes (Tuttle 1987). The only major box rearrangement occurred at the end of the 1980 season when 13 boxes were removed from brushy wren habitat and placed in unmowed open fields to accommodate Tree Swallows.

Eastern Bluebirds and Tree Swallows have shared the Delaware State Park bluebird trail since 1979. Peak production for bluebirds occurred in 1985 when 197 fledged. Tree Swallow production has yet to peak as 387 were produced in 1986.

Methods

All nest boxes in the park are rac-

coon proof: nine are mounted on traffic signs and the remaining 108 boxes are mounted on greased steel pipes with entrances 5.4 feet (1.6 m) above the ground. I use a machinist's mirror and a penlight to inspect all boxes every five to seven days during the nesting season. All nestlings have been banded since 1980, and all nesting Tree Swallow females have been identified or banded since 1981 (Burt and Tuttle 1983). Field observations and nest box data have been recorded in abbreviated form onto data pads, transferred to data books, color coded, and, later, recorded in a master data book after the initial egg dates were extrapolated (Tuttle 1989).

A nest usurpation occurs when a bird terminates the nesting of another species by destroying its eggs or young and building its nest on top of the first nest. Though nest usurpations are not the only form of competition, they are the easiest to record and form the foundation for this study. All usurpation periods represent the mean (average) of all nest usurpation dates and one standard deviation, a period of time which includes 68% of the usurpations recorded.

Results

Conflicts Between Bluebirds and Tree Swallows

In order to truly understand interspecific competition on the trail, the egg laying seasons are compared. Figure 1 shows the egg laying period for bluebirds and swallows. During the study period, bluebirds laid 285 clutches. Initial egg dates were sorted into groups of five days, added cumulatively, and changed to a percent in order to plot a cumulative percent of initial egg dates line for bluebirds.

The bluebird season is 161 days long with the first egg appearing on 1 April and the last nestling fledging on 8 September. The median initial egg laying period is 24-28 May. By adding 34 days to account for three additional eggs, 13 days for incubation, and 18 days for the nestling period, I calcu-

lated the median fledgling period of 27 June-1 July.

Egg laying surges can be seen as an increase in the slope of the line (Fig. 1). The second clutch usually coincides with the median egg laying period, the period representing the halfway point in the season. The third egg laying period occurs after 12 July and represents 5.6% of the clutches laid during the study; yearly values ranged from 0-14.5%. The latest initial egg date for bluebirds is 7 August.

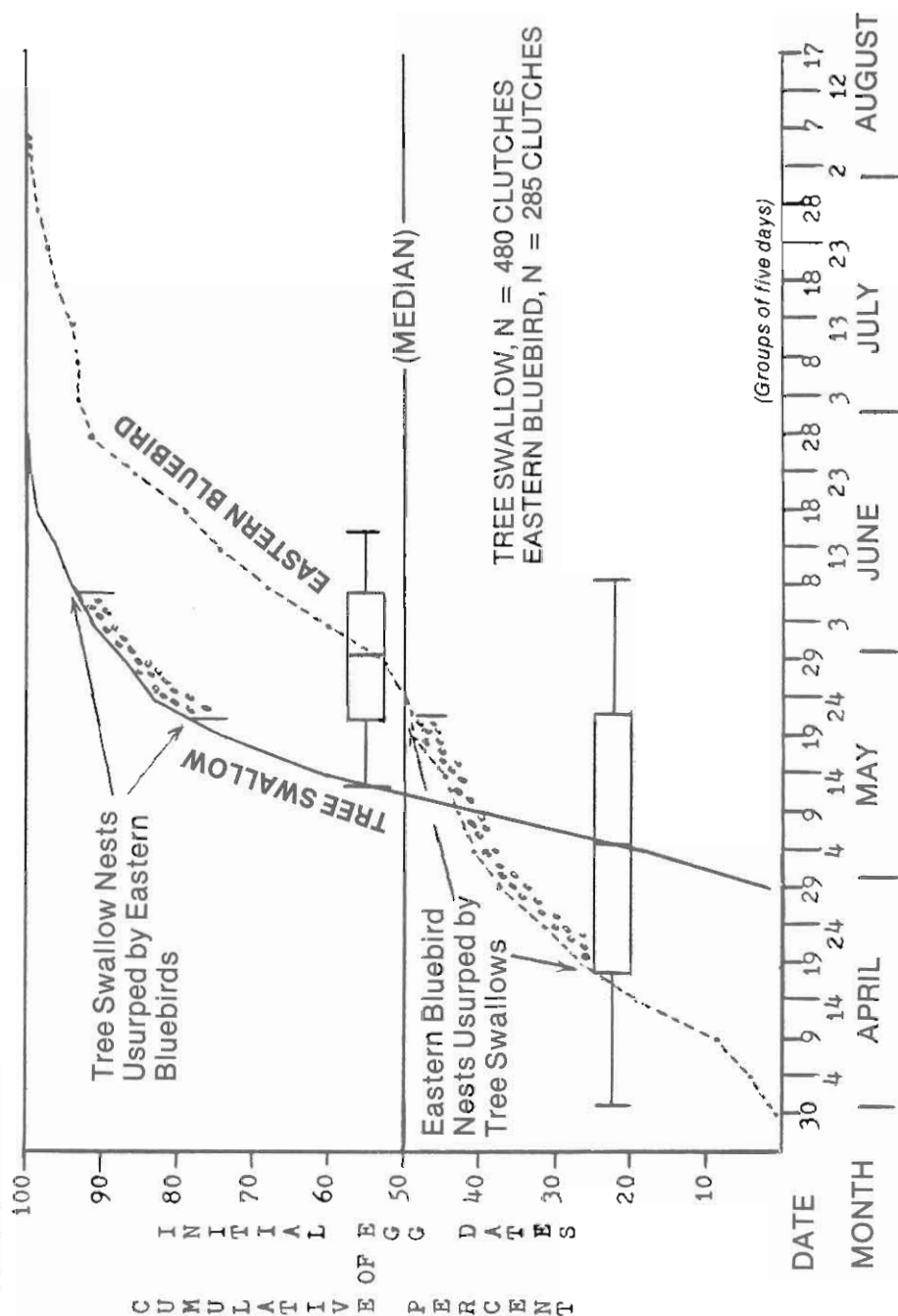
The Tree Swallows' egg laying season (the solid line in Figure 1) is 96 days long. The first egg appeared on 29 April and the last nestling fledged on 2 August. The last initial egg was laid on 25 June. The median egg laying period is 4-8 May. By adding 37 days to account for four additional eggs, 13 days for incubation, and 20 days for the nestling period, I calculated the median fledgling period to be 10-14 June.

Trautman (1968) reports that Tree Swallows migrate from 1 April to 20 May; Borror (1950) estimates their average Ohio arrival date as 3 April. Completed Tree Swallow nests commonly appear to be unused for weeks before the first egg of the season appears. Once egg laying begins, clutches are completed with a synchronous intensity that never fails to amaze me. Only two of 480 clutches for 1979-86 were started during the last two days of April. Nearly three-quarters of the Tree Swallows' clutches began during the first three weeks of May.

Comparing the cumulative percent of initial egg date lines for swallows and bluebirds in Figure 1 shows the chronology of egg laying. Bluebirds lay at the beginning of April. As bluebird egg laying subsides, Tree Swallows begin their concentrated egg laying season during the first three weeks in May.

From 1979-86, nine bluebird nests were disrupted by Tree Swallows, while Tree Swallows were usurped 11 times by bluebirds. Time periods representing one standard deviation (68%) of bluebird and swallow usurpations are represented by the thick bars drawn on

Figure 1. Egg laying and usurpation periods for Eastern Bluebirds and Tree Swallows, Delaware State Park, 1979-1986.



the initial egg date lines in Figure 1. The thin lines projecting from the bars represent the second standard deviation which defines the time period in which 98% of the usurpations took place. The usurpation period (68%) is projected from the initial egg date line of the bird initiating the nest takeover toward the nest-losers' line. The usurpation period also appears as the zone shaded with dots below the initial egg date line.

Swallows disrupted nine bluebird nests, mostly during the latter half of the bluebirds' first egg laying period. The average (mean) disruption date for bluebird nests is 5 May \pm 17.5 days. When this date period is plotted on the Tree Swallows' initial egg date line, the relationship between nesting bluebirds and invading Tree Swallows is revealed. Sixty-eight percent of bluebird nest failures occur between 19 April and 23 May which coincides with the intense egg laying period of Tree Swallows, when swallow nesting behavior is most aggressive, and when many bluebird nests contain eggs.

Swallows terminated two bluebird nests during the egg laying period and six during the incubation period. One nest had ten-day-old chicks which were killed by invading swallows. Even though their skin was not broken, the young bluebirds had been pecked over their bodies, especially about the shoulders. The chicks starved after being buried under the swallows' nest.

The shorter time period during which bluebirds displace swallows occurs later in the season. Eleven Tree Swallow nests were disrupted with a mean date of 30 May \pm 8.4 days. Six nests were terminated during egg laying, four during incubation, and one family of nine-day-old chicks was buried alive under a bluebird nest. The most intense period of bluebird interference is between 22 May and 7 June, a 17 day interval at the beginning of the second egg-laying period for bluebirds and after the first 21 days in May when 75% of the swallow clutches are started.

Bluebird Reproduction and Tree Swallows

Since bluebird conservation is my primary objective, I wanted to know if a growing swallow population had an adverse effect on the reproductive success of bluebirds. To answer this question, I tabulated four measures of bluebird nesting success and compared them to the percent of nest boxes in DSP that successfully raised swallows each year. I wanted to see if I could find a correlation between the success of swallows and each reproductive factor for bluebirds.

I used the correlation coefficient (r) to compare each set of two factors. It is a measure of linear relationship that appears to exist between two factors. A coefficient of zero indicates no relationship; values approaching one, negative or positive, indicate strong possible relationships. Each " r " is accompanied by " p ," a measure familiar to professional biologists. " P " must be less than .05 (5%) before " r " is accepted as a valid, or "significant," correlation and not a relationship that may have occurred by chance alone. The four bluebird reproduction factors that were compared to percentages of boxes raising swallows were the following: average number of fledglings per clutch, rate of double nestings, time between double nestings, and success rate for occupied boxes.

If bluebirds expend significant amounts of energy defending their nests against swallows, then the fledging rate should decline as the swallow population increases and should increase as the swallow population decreases. From 1979 to 1986 the average number of fledglings was 3.15 per completed clutch. The highest fledging rate, 3.61, occurred in 1982; the lowest, 2.72, occurred in 1981. When compared to the percent of successful swallow boxes per year, the correlation coefficient " r " was +.385, ($.5 > p > .2$), a correlation too small to be significant and not a negative value, which would have pointed toward swallow interference.

To measure the effect of competition for nest sites, the ability of bluebirds to nest for the second time in the same box during the same season was investigated. In 1979, only 40% ($n = 10$)

of the nesting attempts took place in boxes that were nested in twice. A peak of 83.3% ($n=12$) occurred in 1981. Since 1982, cases of double nesting have increased from just under 50% to a fairly stable 60-68% during the last three years. Since the second bluebird nesting occurs during the latter half of the Tree Swallows' egg-laying period, a lower rate should be expected if swallows adversely affected bluebirds' ability to "hold" nest sites for a second nesting. When compared to the percent of boxes nested in by swallows, $r = +.383$, ($.5 > p > .2$), too small for concern.

Another possible measure of swallow interference is the time elapsed between the last bluebird fledging from the first nesting and the first egg of the second clutch. An increase in this time period over a period of years of increased Tree Swallow occupancy would be an indication of negative interference from swallows. During the last four years, 1982-86, the mean period between successful nestings has decreased from 24.0 to 18.5 days, showing that competitive pressures from swallows have not had a negative effect on the bluebirds' ability to keep a nest box for a second nesting. In this case, after the comparison was made between the two factors, $r = +.323$, ($.5 > p > .2$).

The last factor examined involved the bluebirds' ability to raise young once a box was claimed. Successful occupancy of nest boxes by bluebirds climbed from 1979 (64.3%) to 1982 (92.3%), slid to 84.4% in 1984, and climbed to a maximum of 94.9% in 1986. Swallow box occupancy climbed from 9.1% in 1979 to 65.7% in 1982. Since 1983, Tree Swallows have nested successfully in 55.6-70.1% of the boxes in the park. It appears that swallows are not having an adverse effect on the bluebirds' ability to nest successfully after claiming a box. When comparing factors from both species, a very highly significant correlation emerges, $r = +.909$, ($p < .002$). As the swallow colony grew, so did the rate of bluebird nesting success. Both species are becoming more successful

in the park, possibly in spite of each other.

Conflicts Caused By House Wrens

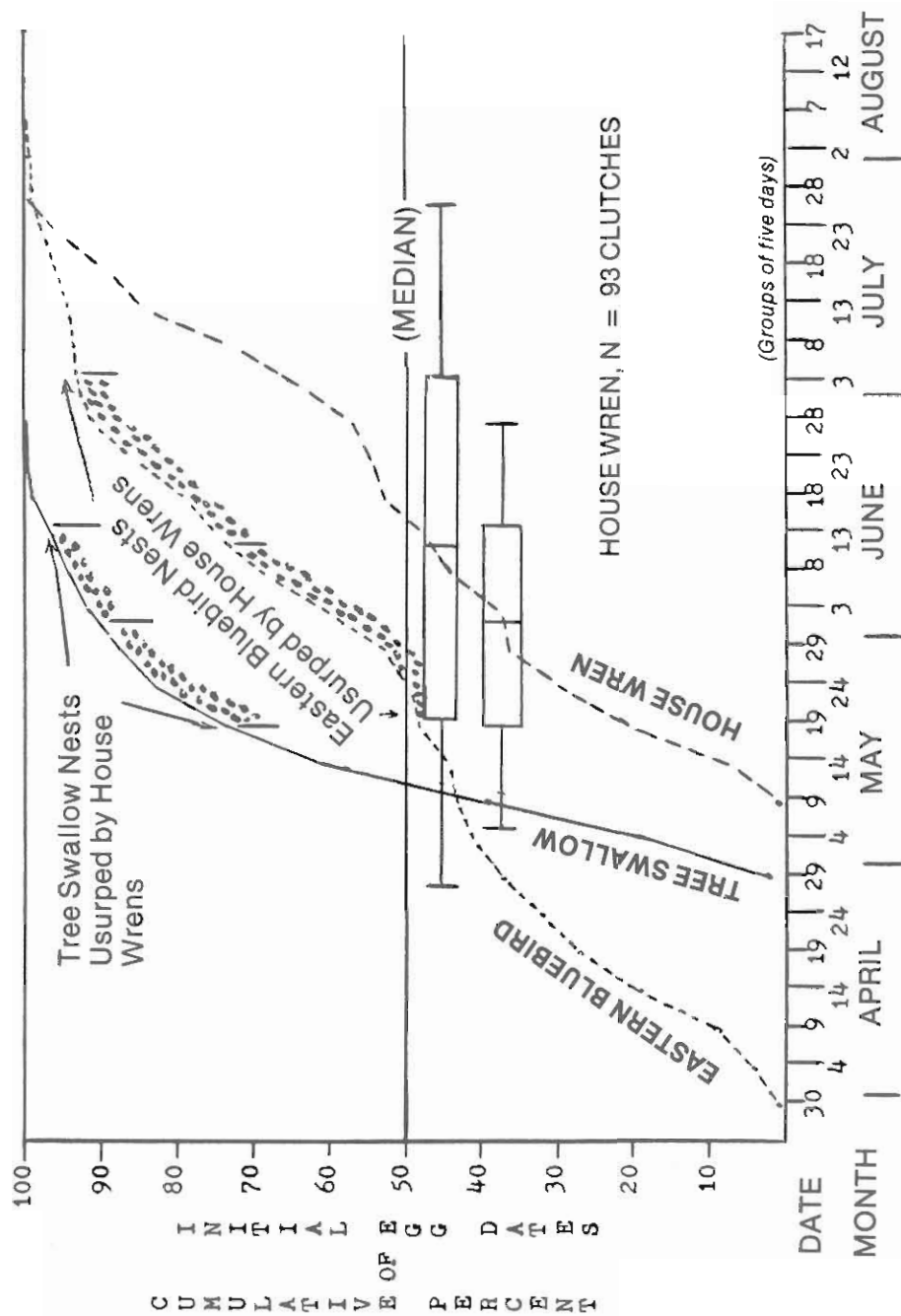
Since the park maximum of 278 wrens fledged in 1980, I used wren data for 1980 to construct a cumulative percent of initial egg dates graph and added it to graphs for bluebirds and swallows (Figure 2). The 1980 wren season was 109 days long with the first egg appearing on 14 May and the last nestling fledging on 1 September. Wrens nest twice and it appears that the second egg laying surge commences during the five day interval of 23-27 June. The graph shows that the second nesting starts before all fledglings emerge from the first nesting. Wren egg production never really reaches a plateau or slows until egg laying ceases toward the end of July.

The plot thickens once we examine wren data as it applies to bluebirds and swallows. During another six year study in DSP, wrens caused 41.2% of the bluebird nest failures and 10.5% of the Tree Swallow nest failures (Tuttle 1987). During 1979-86, House Wrens usurped 23 bluebird nests, almost all during the second bluebird egg laying period. Twelve (52.2%) bluebird nests were disrupted during the egg laying period and 11 (47.8%) usurpations took place during the incubation period.

Do migrating House Wrens dump bluebird eggs? House Wren migration in Ohio occurs between 5 April and 25 May according to Trautman (1968) while Borror (1950) records 14 April as their average arrival date. The mean date for wren usurpation of bluebird nests is 12 June \pm 22.5 days, a 45 day interval between 20 May-4 July when 68% of disruptions occur. The time period almost covers the entire second egg laying period for bluebirds, and overlaps the end of wren migration by five days (Fig. 4). Apparently, wrens may not evict eggs during migration as some conservationists have suggested.

When compared to the usurpation period of bluebird nests, the time period when House Wrens disrupt Tree

Figure 2. House Wren usurpation periods for Tree Swallow and Eastern Bluebird nests, Delaware State Park, 1979-1986.



Swallows is much shorter with a mean of 1 June \pm 13.4 days, a 27 day period between 18 May-14 June. Wren interference during the first three weeks of May when most swallow clutches are started is uncommon to rare for both bluebirds and swallows. Of 46 Tree Swallow nests terminated by wrens, eggs were punctured during the egg laying period in 18 (39.1%), during incubation in 24 (52.2%), and young were thrown out in four (8.7%). Swallow nestlings thrown out by wrens were less than two days old; older nestlings must be too heavy for wrens to lift from the nest.

I've noticed that wrens most often usurp swallows during cold weather when flying insects are at a minimum in the vicinity of the nest. Many times the swallows win back the nest leaving sticks sandwiched between two layers of grass.

Figure 3 compares three factors and adds more fuel to the fire. Two lines illustrate the percentage of boxes successfully nested in by swallows and bluebirds. The third factor represents percentage of boxes showing evidence of wren activity, sticks added to the box, for the period of 15 May-30 June. This is the time when most usurpations of swallow and bluebird nests take place and coincides with the first nesting of wrens. Figure 3 shows that the wren interest in boxes decreased as the rate of box occupancy by bluebirds and swallows increased.

Statistical analysis confirms what Figure 3 illustrates: successful Tree Swallow nests compared to boxes showing wren interest, $r = -.805$, ($p < .02$), a highly significant negative correlation; successful bluebird nests compared to boxes showing wren interest, $r = -.701$, ($.10 > p > .05$), not quite significant; and successful swallow nests compared to successful bluebird nests, $r = +.733$, ($p < .05$), a positive significant correlation. Is the significant correlation between swallow and bluebird success rates related to the stronger negative correlation between swallows and wrens? Do Tree Swallows suppress the aggressiveness of wrens allowing bluebirds to reproduce more successfully? Correlation does

not prove cause and effect but can be accepted as evidence if other factors support the suspected relationship.

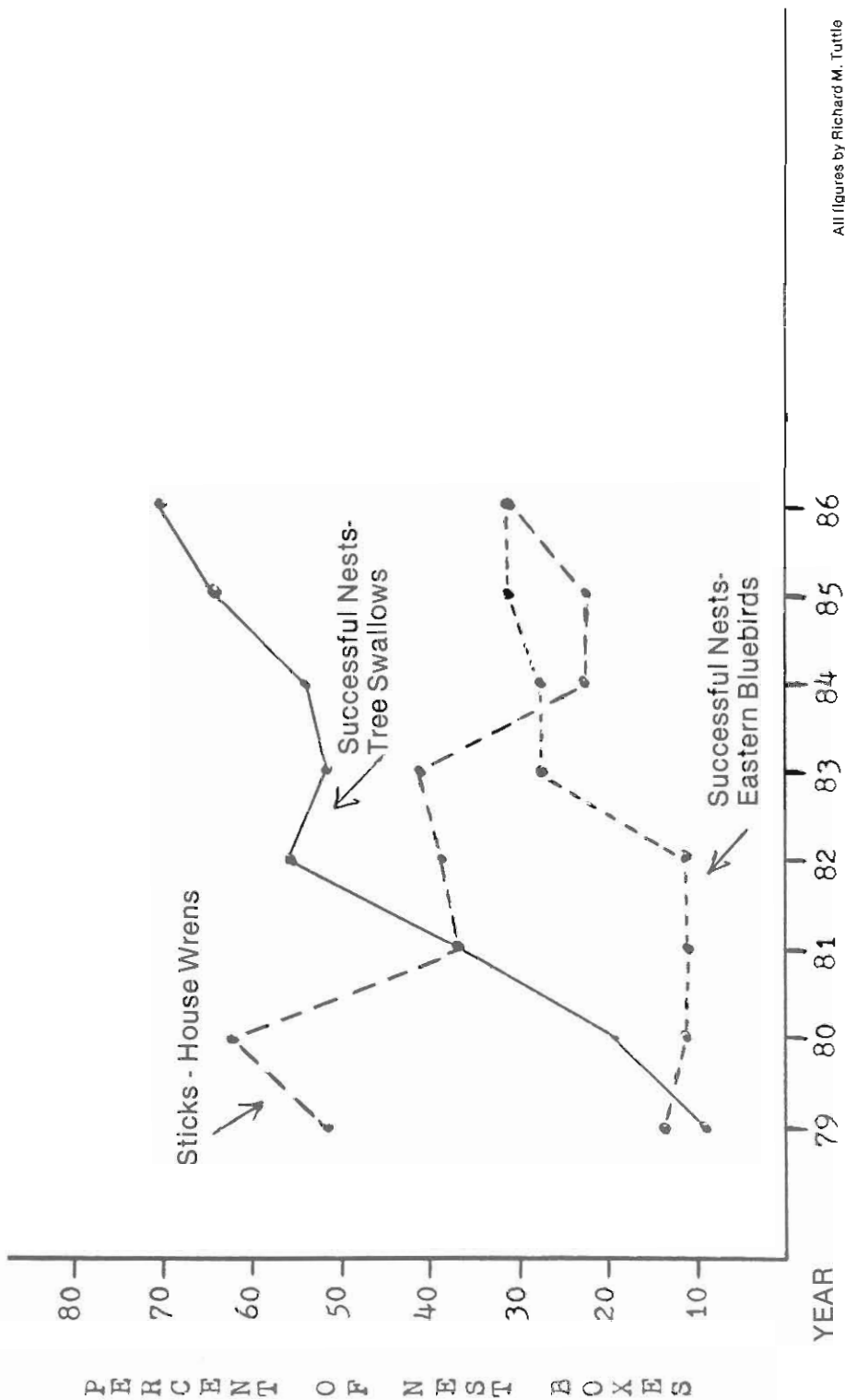
Figure 4 presents evidence that swallows may be benefiting bluebirds. I compared periods of usurpations for 1969-79 on trails that had no Tree Swallows ($n = 25$), in DSP from 1979-86 ($n = 23$) which was the duration of this study, and in DSP from 1982 to 1986 ($n = 17$) which were the years of greatest swallow concentration. During this period swallows claimed more than 65% of the boxes in DSP. The no-swallow years and low-swallow years have periods of wren interference that are almost identical: 44 days from 22 May-5 July and 45 days from 20 May-4 July respectively. The usurpation period during the heavy swallow years was only 30 days long or 14 days shorter. It was not only shorter, but later, two weeks later in the nesting season to be exact—just enough time for many bluebirds to hatch their very vulnerable eggs.

Case histories of paired boxes provided more evidence that Tree Swallows act as guardians against wrens to protect bluebirds. Since 1983, of 15 instances of two boxes paired 7-9 yards [6.4-8.3 m] apart, 13 raised both swallows and bluebirds. Eleven produced swallows and bluebirds from separate boxes. In four cases, wrens deposited sticks in one box as Tree Swallow eggs were in the other. Since I've raised nearly 4500 House Wrens, mostly during the 1970s, I was familiar enough with wren behavior to be amazed by swallows successfully hatching their eggs while wrens showed interest in neighboring boxes. In three of the four instances, wrens failed to line their nest cups and bluebirds nested after I removed the "dummy nests."

Conclusions and Discussion

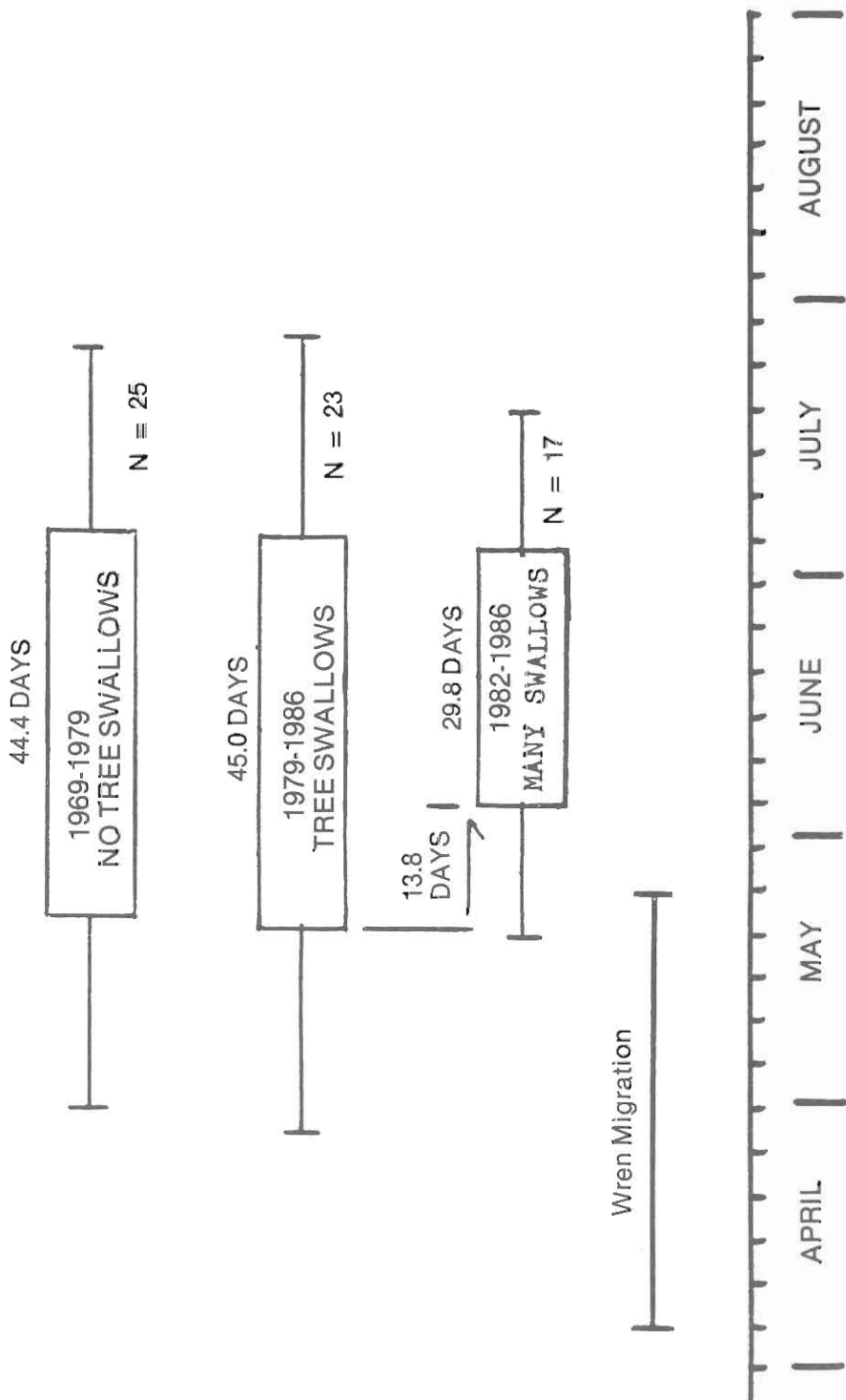
After analyzing 20 years of data, eight years recorded in DSP, I have concluded that Tree Swallows do not have a lasting negative effect on the reproduction of Eastern Bluebirds on my trails. Usurpations are related to nesting needs of the invading species and

10 Figure 3. Nest box use in Delaware State Park.



All figures by Richard M. Tuttle

Figure 4. House Wren usurpation periods for Eastern Bluebird nests.



the vulnerability of the nest of the initial nester. The period when bluebird nests are most vulnerable is followed by a period when bluebirds usurp swallows. Usurpations by both species are infrequent compared to the total number of successful nesting attempts.

Wrens are the greatest threat to bluebirds and swallows. Wrens usurp bluebird nests during the bluebirds' second egg laying period. Wrens usurp swallow nests after the swallows' intense egg laying period during the first three weeks in May. Both usurpation periods begin at the same time but bluebirds remain vulnerable longer because they have eggs in their nests later in the season.

Tree Swallows help bluebirds by deterring wrens. Since 1982, increased swallow populations have successfully suppressed wrens. Bluebirds have benefited by having two additional, relatively wren-free, weeks to hatch their eggs.

I offer the following scenario to explain how Tree Swallows inhibit House Wrens to help Eastern Bluebirds. Bluebirds and wrens react differently to swoops from aggressive swallows. I've seen pairs of bluebirds flare their wings and stand in defiance on top of their nest boxes as swallows, sometimes in mobs of six or more, try to drive them away. I've never seen a bluebird retreat from aggressive swallow swoops.

House Wrens sing and flutter from bush to bush as they work their way toward a desired nest box. As they emerge from cover to fly the last leg to the box, one swallow swoop will drive wrens into the nearest bush. (This is possibly the best reason to place nest boxes 40 yards [36.6 m] from brush to discourage House Wrens, if you're lucky enough to have the space.)

Veteran bluebirders with swallows know that it is quite common for swallows to protect boxes other than their own, even boxes that contain nesting bluebirds. A perceived threat to any box will stimulate swallows to swoop, dive, and mob. This may possibly include any wren within the colony's breeding area. Tree Swallows will de-

fend all nest boxes within a 15 meter (16.4 yds.) radius of their own nest (Harris 1979, Robertson and Gibbs 1982). This would account for the success of paired boxes, but would not explain the presence of defending swallows near solitary boxes that contain bluebirds.

Stutchbury and Robertson (1985) found that as many as one of four adult birds in a mature swallow colony can be floaters. Floaters are nonbreeding adult birds that want to nest and that will nest, if they find an opportunity (nest box). Could a floating population of swallows be patrolling the bluebird trail in the park searching for nest sites and, inadvertently, keeping wrens in the bushes at a safe distance from bluebird nest sites?

If we refer back to Figure 3, perhaps the 1982 swallow population was approaching a saturation point for nest boxes but had few floaters to defend other nest boxes. In 1983, swallows returned to the park with a floating population and nesting bluebirds surged in response to two additional wren-free weeks during their second nesting (Figure 4).

Recommended Management Practices

I am unaware of the various regional nesting seasons within the breeding ranges of Tree Swallows and Eastern Bluebirds, but in Ohio it is a good practice to erect as many boxes as possible to attract swallows. I mount many boxes in high grasses, not usually attractive to bluebirds, in order to attract swallows. I believe that isolated breeding pairs of swallows cannot protect their nests, and the nests of others, as effectively as a colony. For this reason, I mount boxes wherever I can on all of my trails in order to create swallow colonies. I never try to attract wrens by mounting boxes in brushy habitats since neither bluebirds nor swallows are compatible with wrens.

During the study, 27 solitary boxes produced both bluebirds and swallows during the same season. During the first three years, no boxes raised both species. Starting in 1982, yearly use of

solitary boxes by both species was 1,1,3,8, and 14 boxes respectively, showing increasing competition for nest boxes. In 14 cases bluebirds used the boxes first, in 13 cases swallows were first to nest. Since bluebirds nest twice and swallows once, boxes used first by bluebirds may not have been available for the second nesting since they were occupied by swallows. The solution to this problem is simple: paired boxes should greet each new nesting season at sites where a solitary box produced both swallows and bluebirds during the previous year. Good record keeping will make this objective possible.

Many bluebirds and swallows return to nest sites used the previous year. During the eight years of this study, 25.2% of 158 female swallows returned to nest in the same box as the previous season. One case merits mentioning. Bluebirds and swallows had fought over box #93 for nearly two weeks with bluebirds being victorious. The swallows persisted with occasional swoops at the defending bluebirds, so I erected a second box 7 yards [6.4 m] away. The swallows moved in immediately. When I identified the incubating swallow female several weeks later, I was not surprised to find that she had nested in #93 the previous year.

One last comment. I consider myself to be part of the wildlife community on my trails. I mount, monitor, and maintain my trail boxes to add harmony, not only to the wildlife communities, but to my own life. By analyzing my data, I have increased my understanding of the events that shape large parts of my personality. I have reached a level of understanding that has enabled me to spiritually share the events of each nesting season. Since I understand more, I am upset less. For example, when I see a pair of bluebirds ducking and flaring their wings as they protect their box from the diving hordes of Tree Swallows, I actually cheer them on—both species that is. I

know that if each species has what it takes to raise a family, they will do so. I have done my part, by using all that I know, to give them the best competitive edge. More important, I've found more harmony than conflict between bluebirds and swallows. I have learned that bluebirds are actually helped later by the same species that had harassed and threatened them earlier in the season. Not only will the competition between swallows and bluebirds result in stronger, more vigorous young, but there also will be more young to pass on their parents' successful traits. ■

Acknowledgements

I wish to thank Dr. Edward H. Burt Jr. for his comments during the review of this manuscript and other members of the Zoology Department, Ohio Wesleyan University, for their assistance. As always, I thank the Ohio Department of Natural Resources and the management at Delaware State Park for the privilege which led to this study.

Literature Cited

- Borror, Donald J. 1950. A checklist of the birds of Ohio. *Ohio J. Sci.* 50:1-32.
- Burt, E.H., Jr., and R.M. Tuttle. 1983. Effect of timing of banding on reproductive success of Tree Swallows. *J. Field Ornithol.* 54(3):319-323.
- Harris, R.N. 1979. Aggression, superterritories, and reproductive success in Tree Swallows. *Can. J. Zool.* 57:2072-2078.
- Robertson, R.J. and H.L. Gibbs. 1982. Superterritoriality in Tree Swallows: a re-examination. *Condor* 84:313-316.
- Stutchbury, B.J. and R.J. Robertson. 1985. Floating populations of female Tree Swallows. *Auk* 102(3):651-654.
- Trautman, M.B. and Mary A. 1968. Annotated list of the birds of Ohio. *Ohio J. Sci.* 68:257-332.
- Tuttle, R.M., and F.R. Caldwell. 1985. Sign-mounted nesting boxes work. *Sialia* 7(2): 43-47.
- Tuttle, R.M., 1987. A six-year study of nesting Tree Swallows in Delaware State Park, Delaware, Ohio, 1979-1984. *Sialia* 9(1):3-7, 34.
- Tuttle, R.M., 1989. Bluebird trail data: establishing histories for posterity. *Sialia* 11(2): 49-55.

311 West Central Ave.
Delaware, OH 43015

FIELD TESTS OF THE "BIRD GUARDIAN" COMMERCIAL PREDATOR GUARD

Kevin L. Berner

As Research Committee Chairperson for the North American Bluebird Society, Dr. Cathy Blomhowiak was asked by the Board of Directors to field test the "Bird Guardian." When Kevin Berner became head of the Research Committee he continued the project. This report was submitted as part of his annual report at the board meeting on 26 October 1990.

Introduction

Numerous strategies have been proposed to reduce losses of bluebirds (*Sialia spp.*) and other native cavity nesting birds due to predation by raccoons (*Procyon lotor*), red squirrels (*Tamiasciurus hudsonicus*), and domestic cats (*Felis catus*) (Zeleny 1976). Henry Sommers of Pine City, Minnesota markets a 3 1/2 in. (8.9 cm) translucent predator guard that extends beyond the front of the entry hole. Cash (1990) described the use of a PVC elbow which when screwed to the front of a nesting box would deter predators from entering the box. A commercial predator deterrent, known as the "Bird Guardian," distributed by Audubon Entities of Apopka, Florida was developed to reduce these losses. The North American Bluebird Society enlisted eight bluebird researchers throughout the United States during 1989 and seven researchers during 1990 to field test this device before it would consider endorsing it for widespread use by the public.

Description of the Device

The basic premise behind the "Bird Guardian" is that it increases the distance that a predator would have to extend its arm into a nesting box before reaching down toward the nest. This is the same concept that is used to justify the addition of an extra block of wood over the entry hole as commonly employed by bluebird enthusiasts (Dew *et al.* 1986, Zeleny 1976, Schriener 1989). Wooden guards often do not adequately protect bluebird nests; therefore, alternative deterrent devices have been developed to attempt to re-

duce predation. The "Bird Guardian" is a 3 in. (7.6 cm) long molded plastic tube with a 1 1/2 in. (3.8 cm) inner diameter. It is perforated with 20 3/8 in. (1 cm) round holes which permit light to enter the otherwise opaque device while also increasing air circulation. The Guardian attaches rigidly to the entrance of the nesting box with four wires that extend from inside the guard through the entry hole before bending 180 degrees and locking against the inside of the box. A threaded collar can be adjusted for a tight fit on any thickness of box front. Once tightened, it is highly unlikely that any animal could remove it. Recent Guardians have been modified to include a tail brace extending 3 in. (7.6 cm) below the opening where the birds can grip below the device while giving them a surface against which to brace their tails for balance. In 1989, only one observer had any form of tail brace on his Guardian, while in 1990



Photograph by Chel Ryndak

House Wren nest in box equipped with a "Bird Guardian" (Audubon Entities, Ltd.), a commercial predator guard.

several researchers used models featuring a tail brace.

Work that I have done with a captive raccoon indicates that boxes equipped with Guardians offer significantly more protection from nest box raids by raccoons than the more common wooden guards over the nest box entry holes.

Methods

Eight researchers with extensive nesting box trails were selected to field test the device by Dr. Cathy Blowhowiak, who was the Chairperson of the Research Committee for NABS at the initiation of the study. These researchers were asked to select boxes which had been used by bluebirds during the summer of 1988 as study boxes. During the 1989 breeding season, the researchers were instructed to place the "Bird Guardian" devices on a number of these "test" boxes and leave them off "control" boxes. This would allow comparisons to be made as to whether or not the bluebirds or other species would use boxes with the predator guards. During 1989 and 1990, I coordinated this project with the assistance of seven observers.

1989 Results

Larry Zeleny tested the Guardian on his trail of 57 nesting boxes in Beltsville, Maryland. Sixteen boxes were fitted with the Guardian and an additional 41 were not. Of the boxes without the guards, 35 (85%) were occupied by Eastern Bluebirds (*Sialia sialis*), while 2 (12%) of the boxes with Guardians were used by bluebirds. Dr. Zeleny concluded that although some bluebirds did use the Guardian, they preferred boxes without this feature. House Sparrows (*Passer domesticus*) attempted nests in 5 (12%) boxes without guards and 1 (6%) box with a guard. House Sparrows were not a significant competitor for nest boxes on his trails due to 23 years of control without any nests being allowed to fledge young.

Sadie Dorber coordinates the

monitoring of a trail of 30 paired boxes at Oquaga Creek State Park south of Masonville, in Delaware County, NY. She selected six nest boxes that had been used by bluebirds during the previous year and placed Guardians on all of them. Bluebirds had been frequenting the park for some time, but they initiated no nests in the boxes with Guardians, although some other boxes were used. A Guardian was placed on a box with young nestlings in it and the adults would not enter the box. Eventually all of the Guardians were removed at the request of the park and nesting was initiated by four pairs of bluebirds soon thereafter.

Delos "Chuck" Dupree tested the Guardian on one of two nest boxes. He observed that bluebirds investigated both boxes, and then selected the wooden guard box. He also observed a male House Sparrow using a plastic guard as a perch to sing from. He felt that providing such a perch was comparable to placing wooden perches on bird boxes, which NABS discourages.

Valerie Monschke submitted a report for the Wallowa Valley Ranger District of the Wallowa-Whitman National Forest in northeast Oregon. Guardians in this study area were installed on 25 May 1989, after some Western Bluebirds (*Sialia mexicana*) and Mountain Bluebirds (*Sialia currucoides*) had initiated nesting. Guardians were generally not put on boxes where nests had been initiated by bluebirds; however, on one nest where a Guardian had been mounted, the bluebirds would not reenter the box over the following 30 minutes. The guard was subsequently removed. Eleven boxes were equipped with Guardians. Two bluebird nests without eggs were present in boxes equipped with Guardians, but it could not be determined if these nests were from 1989 or the previous year. None of the boxes with Guardians were known to have fledged bluebirds and no bluebirds initiated nests in boxes after the Guardians were in place. Ten control boxes were monitored, 6 of which had bluebird use. It must be noted that boxes that already had bluebird nests on 25 May generally were eliminated as

test boxes, introducing a bias to these tests.

John Rogers monitors an extensive nesting box trail near Brewerton, New York. He tested five Guardians on boxes used by bluebirds the previous year. All of these boxes were paired with boxes without commercial guards. One pair each of House Sparrows and House Wrens (*Troglodytes aedon*) used boxes with Guardians while the other three were left vacant. There were two bluebird nestings and two Tree Swallow (*Iridoprocne bicolor*) nestings in the paired boxes without Guardians. The wren nest in the one box equipped with a Guardian was built with many fewer sticks than was typical on this trail.

Mark Raabe tested nine Guardians on his 75 nest boxes on or near the Antietam Battlefield and three in his yard in Alexandria, Virginia. He observed no use by Eastern Bluebirds even though 160 bluebirds were fledged on his battlefield trail and some of the boxes with Guardians had previous histories of use by bluebirds. One House Wren and several House Sparrows used the boxes with the commercial guards. Raabe was able to observe a pair of boxes in his yard, one of which had a 1 1/2 in. hole and a Guardian, the other of which had a 1 in. (2.5 cm) entrance. The Guardian was attached after House Sparrows began nesting. Immediately after the Guardian was attached, the House Sparrows abandoned the box and moved to the nearby box with the 1 in. entrance hole, which they repeatedly tried to enter. This pair spent four weeks attempting to establish a nest in the box with the small opening. The male was eventually able to enter the box and was observed taking nest material offered by the female into the box. The female also was able to get into the box on one occasion. All during this time, the nearby box with the Guardian remained unoccupied.

I tested "Bird Guardians" in two areas of Schoharie County in Upstate New York. On my Blenheim-Gilboa study area, there were 52 nest boxes

set up in a grid of boxes placed 100 yards apart in rows, with each row 100 yards away from the adjacent row. This area has a uniform habitat featuring short grasses and uniformly spaced rows of northern white cedar (*Thuja occidentalis*). The boxes included equal numbers (13) of boxes with 3/4 in. (1.9 cm) wooden guards, 1 3/8 in. (3.5 cm) wooden guards, 3/4 in. wooden guards with roofs extending to overhang 5 in. (12.7 cm) over the front of the boxes and plastic Guardians. No bluebirds attempted to nest in the boxes with the commercial guard, 1 nested in a box with a 3/4 in. wooden guard, 1 in a box with a 1 3/8 in. wooden guard, and 5 in boxes with extended roofs. Only 1 Tree Swallow attempted a nest in a box with a commercial plastic guard while between 6 and 8 nests were attempted in each of the other styles of boxes. None of the 62 Tree Swallows fledged came from boxes with Guardians. House Wrens showed the least selectivity among boxes with various deterrent features. Two of eight attempts by wrens were in boxes with Guardians, producing 10 of the 27 wrens fledged.

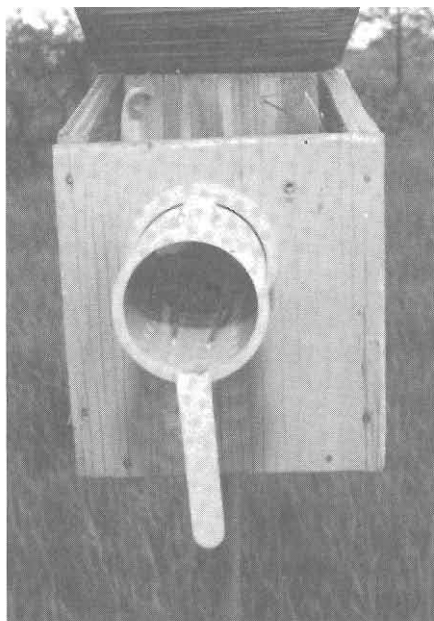
Forty-four additional study boxes were selected throughout northern Schoharie County within the towns of Cobleskill, Carlisle, Seward, and Richmondville. All of these boxes had been used by bluebirds during the previous summer and many had been consistently used for five or more years. Half or 22 of the boxes were equipped with Guardians and the other 22 had wooden guards or no deterrents at all. No box with a Guardian was known to have been used by bluebirds. Nine Tree Swallow pairs and one House Wren pair nested in boxes equipped with these commercial guards; the other 12 boxes were all empty throughout the entire nesting season. In the control boxes there were 10 Eastern Bluebird, 6 Tree Swallow, and 2 House Sparrow nesting attempts. These tests indicate that in this county, which has large numbers of alternative nesting boxes, bluebirds avoid the Guardian. Tree Swallows exhibited greater acceptance of the plastic guards. The number of House Sparrows using boxes in

this study area was too small to determine the effect of the Guardian.

Chet Ryndak from Northbrook, Illinois was the only investigator cited in this study who used a version of the Guardian equipped with a tail brace. His homemade tail brace consisted of part of a popsicle stick superglued to the lower edge of the entry hole of the Guardian and extending straight down below the entry hole at a 90 degree angle to the plastic guard. Ryndak found that the Guardians had a much greater level of acceptance by cavity nesters if they had this surface to brace their tails against for support. All currently marketed Guardians have a surface below the entry to serve as a tail brace functioning in the same manner.

Ryndak monitored 50 boxes including Peterson and standard style boxes on two sites. Fifteen of these boxes were equipped with Guardians. Of the 10 bluebird nests, five were successful and three of these were in boxes equipped with the Ryndak-modified Bird Guardians, while the other boxes had no commercial guards. A fourth box equipped with a Guardian was used by bluebirds, but the nest failed during a period of extreme heat. The area with the highest density of Tree Swallows had few Guardians on boxes. Several Tree Swallows did nest in boxes with Guardians with tail braces, but none nested in boxes equipped with these guards without the tail brace. Many of the boxes equipped with Guardians were used by House Wrens either as actual nests or as dummy nests used to exclude other nesting competitors. Ryndak felt that wrens had no problem at all negotiating the long entry way through the commercial device even with long sticks in their bills.

Ryndak found that the tail brace offered a significant improvement in the effectiveness of the Guardian. These findings were reflected in the redesign of the device by Audubon Entities in order to improve their acceptance by cavity nesting birds while continuing to minimize the ability of predators to destroy nests. Forty percent of



Photograph by Chet Ryndak

Tree Swallows nesting in a box equipped with a "Bird Guardian" attached to entrance. A wooden popsicle stick has been added to provide tail support. All Guardians are now equipped with a tail brace.

Ryndak's bluebirds' nests were in boxes with the tail brace, while only 30% of the boxes had Guardians, some of which didn't include the brace. More bluebirds nested in boxes equipped with Guardians than would be expected based on random box selection. This would indicate that at least in this small sample, the Guardians with the tail brace were not avoided by bluebirds and may have even been preferred.

1990 Results

Larry Zeleny placed Guardians without tail braces on 17 of 57 boxes on his nesting box trail. All of his boxes with Guardians had been used by bluebirds in 1989 and were considered to be among his "best" boxes. Not all the control boxes had been used by bluebirds in 1989. Only one of 17 (5.9%) nesting boxes with a Guardian was used by bluebirds, while 34 of 40 (85%) boxes without Guardians were used by

bluebirds. The pair using the nesting box with the Guardian was successful. One pair of House Sparrows also initiated a nest in a box with a guard, but this nest was destroyed. All of the other 15 test boxes remained unused. All 17 Guardians were removed around 1 June.

Zeleny tested three Guardians with tail braces later in the season. He placed one device on a nest where a bluebird pair had just completed a nest and the nest was then abandoned. A second box with a Guardian was used successfully by bluebirds; the third box was not used by any bird.

Valerie Monschke placed Guardians with tail braces on nine nesting boxes and had nine other boxes without these devices as a control. One Guardian was placed on a box where a female bluebird was incubating six eggs; later in the season a swallow nest was found on top of the bluebird nest. Monschke was not able to intensively monitor this box throughout the summer. Four of the nine boxes without Guardians were used by bluebirds, and two boxes were used by wrens. Chipmunks used one each of the two types of boxes. Overall, birds used one of nine boxes with Guardians and six or nine boxes without them.

I continued testing Guardians at my Blenheim-Gilboa study area where 13 Peterson boxes were added. I also developed a second research site on the campus of SUNY Cobleskill. Between the two sites I had 21 Guardians with tail braces and 76 control boxes. No boxes with Guardians were used by bluebirds while 11 of the control boxes were used. Tree Swallows had nests in four boxes with the guards and 45 without guards. House Wrens nested in two boxes with Guardians and attempted 16 nests in control boxes. House Sparrows initiated nests in one box with a Guardian and five without; however, none were allowed to nest successfully. In the 21 boxes with Guardians, only one wren and two swallow nests were successful. Between the two study areas 80% of all boxes without Guardians were used by at least one species of native birds while only 19%

of the boxes with the device were used by native species.

Ryndak tested only Guardians with tail braces in 1990. He had 31 boxes with the guards and 42 without them. Guards were placed on boxes before nesting had been initiated. Guardians were added to three control boxes where bluebird eggs were already present and two of the three pairs accepted the device and continued to nest. No bluebirds initiated nests in boxes with Guardians, while seven control boxes were used by bluebirds. Other species using boxes with the predator guard included 17 Tree Swallows, 13 House Wrens, 6 House Sparrows, and 4 Black-capped Chickadees (*Parus atricapillus*). Control boxes were used by 17 swallows, 9 wrens, 30 House Sparrows, and 2 chickadees.

Donna Hagerman from Reno, Nevada participated in the study for the first time in 1990. Nesting had been initiated by some birds when she received her Guardians. Two were placed on boxes where Ash-throated Flycatchers (*Myiarchus cinerascens*) had already laid eggs and both nests were abandoned. Eight other Guardians were randomly placed on non-occupied boxes. No birds of any species initiated nests in boxes following the addition of the Guardians. Of the 161 boxes without the devices, 97 were used by Mountain or Western Bluebirds, 10 by Ash-throated Flycatchers, 5 by House Wrens, 5 by Plain Titmouse (*Parus inornatus*) and 1 by chickadees. All of Hagerman's boxes had 1 9/16 in. (4.0 cm) holes which her studies have indicated were preferred by 82% of the bluebirds over 1 1/2 in. holes. The Guardians have a 1 1/2 in. entrance.

Alan Mapes, a New York Department of Environmental Conservation employee at the Five Rivers Environmental Education Center in Delmar tested three Guardians. All three were placed on nesting boxes where bluebirds had established second nests. In two cases the bluebirds abandoned, but the third pair remained and was successful.

Sam Madison monitors a trail of 30 boxes at the Normanskill Golf Club

near Delmar, New York where he has suffered high bluebird losses due to raccoon predation. Over the course of the summer he acquired enough Guardians with and without tail braces to cover most of his nesting boxes. Some Guardians were placed on boxes already occupied by bluebirds, while others were placed on empty boxes. He observed no abandonment of previously active nests and several boxes were selected by bluebirds after the addition of the devices.

Discussion

Early studies indicate that bluebirds appear to avoid the "Bird Guardian" without the tail brace, when other boxes are available. Several researchers found that placing the Guardian on boxes already occupied by bluebirds seemed to cause confusion for the birds and lead to nest abandonment, although this did not always occur. Placing the Guardian on boxes may also provide a perch for House Sparrows, further discouraging bluebird use. Tree Swallows may be somewhat more tolerant of the Guardian, and House Wrens appear to accept the device more readily than any other species.

Although most researchers found that boxes with Guardians were still used at a lower rate than boxes without Guardians, it appears that the Guardians with the tail brace may be more acceptable to bluebirds. This is the only type of Guardian marketed at this time and it may be an improvement over the versions without the brace.

Recommendations

Use of "Bird Guardians" without the tail brace should be discontinued. Its producer has recognized this problem and no longer markets the device without a brace. Additional testing should be conducted on the tail brace version of this guard. Where testing of this device is done, the guards should be placed on boxes before the initiation of any nesting. Frequent monitoring of the boxes is essential in determining the effects of the device. In

cases where Guardians are placed on boxes already occupied by incubating bluebirds, the boxes should be observed for a period of time immediately after installation to ensure that the birds have accepted the device. If they haven't, the Guardian should be removed before abandonment occurs. Where observation is not possible, the Guardians should not be added to active nests. Based on data available to this point, I would not recommend widespread use of "Bird Guardians." My tests indicate that boxes mounted on greased pipes effectively eliminated raccoon predation while having less impact on birds using the nesting box than Bird Guardians.

Acknowledgements

I would like to thank all the bluebird trail monitors listed above for their willingness to provide their field data for this paper. Dan Schuppel, Joe Brown, Wesley Shuart, Ray Briggs, Karl Schroeder, and Mike and Nancy Spennello, members of the Schoharie County Bluebird Society, allowed me to place Guardians on their nesting boxes which they monitored frequently throughout the summer of 1989. Nancy Niles helped by reviewing this manuscript and by assisting in monitoring test boxes. Chet Ryndak provided photographs of bluebirds, swallows, wrens, and chickadees using Bird Guardians. Most of all I would like to thank Patricia Batdorff of Audubon Entities for providing many of the Guardians used in this research and for providing contacts with additional individuals using them in the field.

Literature Cited

- Cash, W.A. 1990. PVC plastic elbow attachment: a raccoon, feral cat, flying squirrel deterrent. *Sialia* 12(2):69.
- Dew, T., C. Dew, and R.B. Layton. 1986. *Bluebirds: Their Daily Lives and How to Attract and Raise Bluebirds*. Nature Publishers, Jackson, Miss. 212pp.
- Scriven, D.H. 1989. *Bluebirds in the Upper Midwest: A Guide to Successful Trail Management*. Audubon Chapter of Minneapolis. 179pp.
- Zeleny, L. 1976. *The Bluebird: How You Can Help Its Fight for Survival*. Indiana University Press, Bloomington, Ind. 170pp.

State University of New York
Cobleskill, NY 12043

PLANTINGS FOR BLUEBIRDS AND OTHER WILDLIFE

Mistletoe

Karen Blackburn

While most people are familiar with mistletoe as a traditional holiday decoration, some might be surprised to see these plants in their natural environment, perched as small shrubs upon the branches of trees. Mistletoes are parasitic plants, deriving at least part of their nourishment from the trees on which they grow. There are a number of species of mistletoe in the United States, the majority of which are native to the western third of the nation. Mistletoe is highly dependent upon birds to disperse its seeds. After feeding upon the fruits, birds often wipe their beaks on branches, inadvertently "planting" the sticky seeds on a host tree. The mistletoe described below is the species most often gathered during the Christmas season.

Mistletoe

Phoradendron serotinum

Native Range—New Jersey south to Florida; west through southern Ohio, Indiana, Illinois, Missouri, Kansas and eastern Texas.

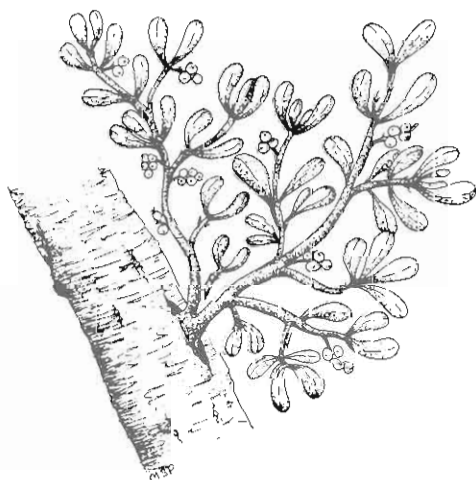
Hardiness—To Zone 6

Habitat—Grows on branches of deciduous trees which are exposed to sunlight.

Habit—A semi-parasitic shrub attached to limbs of trees and reaching a height of one foot (30 cm). The thick, leathery leaves are opposite one another on smooth, green, jointed stems.

Fruit and Flowers—Yellow flowers, approximately 1/8 in. (3 mm) in diameter, occur in axillary clusters during the autumn months. Male and female flowers on separate plants. White fruits, each about 1/4 in. (6 mm) in diameter, are borne in clusters.

Culture—Generally "planted" by birds. Can most likely be propagated by limiting nature and pressing the sticky seeds upon the branches of deciduous trees in open areas.



Wildlife Value—The fruits of the many North American species of mistletoe are taken by the Blue Grouse, Band-tailed Pigeon, Gambel's and Mountain Quail, Eastern and Western Bluebirds, American Crow, Phainopepla, American Robin, California Thrasher, Hermit Thrush and Cedar Waxwing. ■

4961 Dogwood Dr.
Marianna, FL 32446

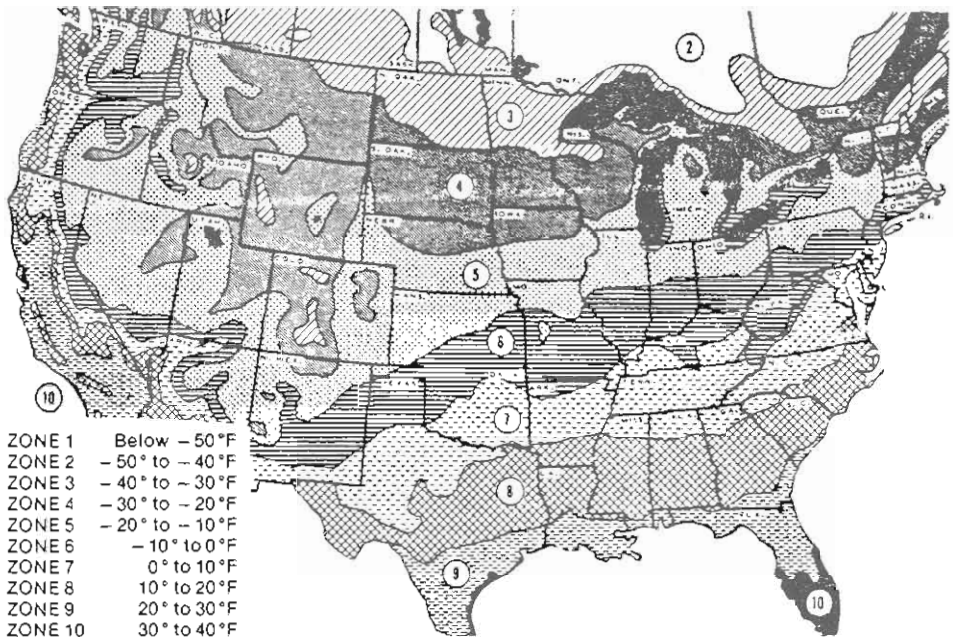


Figure 1. Hardiness Zones for the United States and southern Canada. Temperatures for each zone are the average annual minimum temperatures. When no zones are mentioned with the plant description, plants are hardy anywhere. Factors within zones such as altitude, exposure, soil type, moisture, etc. can create variations. This map was developed by the Agricultural Research Service of the U.S. Department of Agriculture.



For years bluebirds have been a favorite subject for greeting cards. In December 1989, John Findlay III of Birmingham, Alabama, used the above photograph, reproduced from a 35 mm color slide, to send greetings to some of his "birdy" friends. He reported that it got more raves than any card he has ever sent.

QUESTION CORNER

Lawrence Zeleny

I recently placed a few bluebird houses around my son's home in Newberry, Michigan. The setting is ideal so we were all pleased when my son reported that one nesting box was occupied by bluebirds. Last week he observed a large crow or raven perched on top of the occupied box. As he watched, the bird stuck its head into the house, pulled out a baby bluebird, and flew off with it. The parent bluebirds tried desperately to drive the intruder away, but to no avail.

The house was made to specifications listed for bluebirds. Why was this black rogue able to gain entry?

Kent G. Hanert
Livonia, Michigan

Crows and their close relatives, the ravens, often rob the nests of other birds. It is unusual, however, for them to prey upon bluebirds in a nesting box. In the case you mentioned, the bluebird nest must have been rather high to enable the large bird to reach the nestlings.

An extra board an inch or more thick with a 1 1/2 inch diameter hole attached to the front of the box so the hole would coincide with the entrance hole in the box would probably prevent this kind of predation. This device is commonly used to prevent, or at least make it more difficult, for a raccoon to reach a bluebird nest. Other, more effective guards, are currently being studied by our Society.

On two different occasions I have had bluebirds build a nest in my house, lay eggs, keep going in and out of the



house, and after several weeks leave the nest. The eggs have not hatched. Do you have any idea why this happened?

Jeanne Reitz
Myrtle Beach, South Carolina

There are several possible causes of failure of bluebird eggs to hatch. Among them are the following:

1. Infertility due to physical problems or defects in one or both of the parent birds.
2. Chilling of the eggs during the incubation period due to inadequate attention by the female bird.
3. Overheating of the eggs in exceptionally hot weather.
4. Death of the female bird. The male bluebird is incapable of incubating the eggs.
5. Ingestion of toxic substances by the female bird during egg formation in her body, probably by eating insects that have been poisoned by insecticides. Not much is known about this possible cause, but it may be more serious than is generally believed. ■

Announcements

Announcements of regional or state meetings pertaining to cavity nesters should reach us at least four months before publication date of issue in which item will appear. For example, the winter issue is published on 15 January so material should reach us by 15 September.

Mail to Editor J. Solern, 10617 Graefloch Rd., Laurel, MD 20723

A Bird in the Bush

Karen Blackburn

The last "Bird in the Bush" column included reports from a number of readers who have observed mockingbirds interfering with nesting bluebirds. That column concluded with suggestions for reducing bluebird/mockingbird conflicts, one of which was to move nest boxes from open areas to more secluded sites.

When bluebirds were finally able to nest on our property without mockingbird interference, they did so in a secluded area at woods' edge because nest boxes in the more desirable open areas were occupied by other cavity nesters at the time. Though most of these boxes have since been moved, one box remained out in the open. A pair of bluebirds claimed this box and had completed a nest by 23 February 1990. However, this pair of bluebirds was far more discreet than most, for neither the male or female spent any time perching on the box, a habit which, as noted in the previous column, seems to invite attacks from mockingbirds. Because these bluebirds tended to stay under cover, I hoped for a successful nesting.

On 16 March the clutch was complete with five eggs, and the female bluebird began incubation. Soon thereafter, trouble began. Mockingbirds were seen chasing both the male and female bluebirds and preventing the female from entering the nest box. I observed their interaction for a period of 30 minutes one afternoon. During this time, the female attempted to reach her nest eight times. On four occasions, she was driven from the roof of the box (her habit was to perch there only briefly prior to entering); twice she attempted to fly directly to the entrance hole and was attacked in flight; twice, as she was entering the box, a mockingbird swooped in from behind the box, landing on it with such force as to frighten the female into flight. At the end of this observation period, the female bluebird had still not been suc-



cessful in reaching her nest. At no time did the bluebirds attempt to defend their territory.

On other occasions, three mockingbirds were observed pursuing the bluebirds throughout the yard. Often, the last light of day revealed a mockingbird still perched on this box, with the female bluebird unable to enter. It may be that the bluebird eggs went without incubation during many cold nights. It is certain that incubation was prevented for long periods of time during the daylight hours due to mockingbird interference. In any case, though incubation was initiated on 16 March, the nest and eggs were abandoned on 12 April after 27 days of much-interrupted incubation. Needless to say, this nest box was immediately relocated in a more secluded area.

Yet another individual who has witnessed conflicts between bluebirds and mockingbirds is Bruce Cole of Washington, New Jersey. Mr. Cole has four nest boxes which are mounted on posts in open areas of his yard. He reports that after bluebirds had constructed a nest in one of these boxes in 1988, mockingbirds were observed chasing the bluebirds. Fortunately, these bluebirds were able to successfully defend their nest and raise their brood. However, in 1989, mockingbirds were seen chasing bluebirds that were attempting to inspect nest boxes, and no bluebirds nested on Mr. Cole's property that year. He states, "As soon as the bluebirds show up, the mockingbirds start harassing them, and the attacks are almost constant. I did not have any bluebirds nesting here in

1989, and I believe this is due to mockingbird harassment."

Mr. Cole also notes that House Finches are causing problems for bluebirds in his area. (His is the second such report we have received regarding House Finches.) He writes, "As soon as bluebirds start looking at a box, 15 to 20 finches fly to the box and land on it or on the ground nearby. If the bluebirds fly into the trees, the finches will follow and start closing in on the bluebirds." As Mr. Cole was recording his observations in March 1990, he added, "Right now we have a pair of bluebirds looking at a box, and mockingbirds and finches are harassing them."

It has long been recognized that the introduced House Sparrow and European Starling are enemies of the bluebird. We are perhaps just now be-

ginning to realize that there are significant adversaries among our native birds as well. Though Northern Mockingbirds and House Finches may not physically harm bluebirds, their eggs or nestlings as starlings and House Sparrows do, as long as they are capable, through sheer harassment, of preventing bluebirds from nesting successfully, they may be viewed as a threat to bluebird reproduction.

We thank Mr. Cole for his report and invite other readers to report their observations concerning bluebird/mockingbird interactions. As always, we also welcome observations pertaining to the use of plants by bluebirds and other wildlife. Please send your reports or comments to Karen Blackburn, 4961 Dogwood Drive, Marianna, FL 32446. ■

Orphans and Foster Parents

Florence Germond

Several cases of abandoned baby bluebirds were brought to my attention in 1990. The first deserted nest of two very tiny live birds and two dead was reported to me on a rainy morning in early May. I told the caller to bring them to me and I would try to find a box containing young of the same size. I knew of a box of four young which were the same age: tiny, with no feathers, and hungry. In pouring rain we popped the orphans in quickly. A week later the nest was full of six feathered healthy Eastern Bluebirds. They fledged successfully a few days later.

The second tragedy again was reported by phone, this time in mid August. Most boxes were empty, but I again agreed to try to find a nest in which to put two feathered young. One parent had been taken by a Sharp-shinned Hawk, but the female continued to care for the babies. On this day no parent was seen by the couple in whose yard the box was located. The young called repeatedly; finally they got up to the hole and fell to the ground. Unable to fly, they were picked up and the caller came to me. They were

taking food offered, bread soaked in milk and blueberries; however, even if this had been continued, hand-reared birds never become self-sufficient.

I checked several boxes: one had tiny young and another had four fully feathered ready to go. With hopes that the orphans might be near their size, I drove to the couples' home to find that the young were not nearly mature enough for *that* box. I brought the two babies with me and checked boxes—most of them empty. I walked across a field toward a box where I could hear bluebirds calling, I opened it, and there were three babies exactly the same size as the ones I was carrying. I added the two and hurried away. I was not able to get back until two weeks later. By that time the box was empty except for a nice flat nest, evidence that the nestlings had fledged. There were a dozen or more smooth, clean cherry pits in the nest. Apparently the young had been fed wild cherries or chokecherries which they had digested and eliminated very well.

It is a real joy to be able to go the extra step in bringing back the bluebird. ■

R.R. 2, Box 408
Shunpike
Clinton Corners, NY 12514



June 14, 1990

Dear NABS:

On May 26th our resident bluebirds coaxed four nestlings from the box. Three were normal, but one that we call "Casper" was an albino.

Although Casper was fully feathered and seemed strong, he was unable to sustain a good flight pattern. He flew in clockwise circles for very short distances with little height. After close observation for 14 hours, it was clear that he would not be able to join his siblings, the parent birds' efforts notwithstanding.

We then took it upon ourselves to take Casper to a dear woman known for her ability to rehabilitate wild birds. As of this date, Casper has been rehabilitated to the point that he can now take food himself and shows great spirit and a stronger sense of direction in short flight in a small room.

If he is physically able, we wish to return him to the wild, although we will miss him greatly. We have some questions, however.

1. How rare are albino bluebirds?
2. Does Casper have a 50-50 chance of making it on his own considering his handicaps of being an albino and not knowing how to hunt for his own food?
3. If he has a good chance of making it on his own, how can we best help him make the transition?

Robert G. Long, Sr.
1930 Honeysuckle Dr.
Cumming, GA 30130

Dr. Zeleny's reply:

Pure albino bluebirds are known to occur but are quite rare. All of the feathers of these birds are white and their eyes are pink. No statistics are available on the occurrence of such bluebirds, but probably not more than one in many thousand bluebirds is a pure albino. Partial albinism is somewhat more common.

Obviously, your "Casper" has serious problems unrelated to his albinism and

your efforts to rehabilitate him are to be commended.

It seems quite unlikely, but not impossible, that this bird would ever be able to survive long as a wild bird. It is suggested, however, that he be given a chance. The best plan would probably be to release him close to your home and keep him supplied with food. He would not be likely to wander off as long as he knows where his next meal is coming from. In this way you could continue to enjoy him and, at the same time, give him the opportunity to develop whatever degree of freedom he is capable of attaining. ■



Here is an idea that some bluebirds might find appealing. I cover the top of a nesting box with part of a roofing shingle and then use scrap lumber to put an open box on top of the roof. It can be filled with dirt in which cutworms are placed or the dirt alone would keep a box a bit cooler on a hot summer day.—W.A. Crow, 325 Midland Rd., Southern Pines, NC 28387.

Feeding Station for Nestling Bluebirds

George A. Hurst

I recently read an article by a bluebird trail operator who thought the nestlings would die because the parents could not find enough food for them. Several years ago I thought of a method to help alleviate this problem.

I had an active bluebird nest with four nestlings in my backyard. What if there were not enough insects for the adults to take to the growing nestlings? First, I thought of sweep-netting "bugs" and placing them on a platter in front of the nest box. In order to immobilize the insects it would be necessary to freeze them.

Then I had another idea. I have done some fishing and have used crickets for bait. Crickets are a natural bluebird food item and, therefore, would be an excellent food for nestlings. I placed two 5 foot [1.5 m] poles in the ground about 4 ft [1.2 m] apart and about 6 ft [1.8 m] from the box entrance. I strung fishing line (any string) between the poles at about 4 ft above the ground. Then I tied barbless hooks (any J-shaped "hook") on the cross line at 4 inch [10.1 cm] intervals. I straightened the hooks considerably. (Metal paper clips could probably be used.)

I captured field (black) crickets and purchased house (brown) crickets at the local bait shop. The crickets were impaled by the "neck-collar" on the hooks. If you are not too squeamish, you can remove the crickets' legs and wings to make a "better" morsel for the nestlings. Remember, we are trying to insure the survival of bluebird nestlings.

I waited until the female bluebird went into the nest box and

quickly set up the feeding station. The first time the female came out of the box she saw the crickets, pulled one off the hook, and took it to a nestling. She then proceeded to "clean" the line.

The feeding station proved to be acceptable to this female bluebird. She saved a lot of time and energy and provided high quality food to her nestlings. Crickets can be purchased at bait shops and held in large numbers until needed. Perhaps the feeding station can be modified, but some nestlings can be "fed" this way. ■

Department of Wildlife & Fisheries
P.O. Drawer LW
Mississippi State, MS 39762-5917

BLUEBIRD BOOSTERS

Appearing on the inside back cover is a list of those individuals who have made a financial commitment to bluebirds and native cavity nesters over and above their annual dues. Such support is essential in maintaining a stable dues structure. We thank the individuals, organizations, and businesses for their generosity.

You, too, can become a Bluebird Booster. For a donation of \$25.00 per issue or \$75.00 per four issues, you can be designated as an Eastern, Western or Mountain Bluebird Booster (your choice); for \$15.00 per issue or \$50.00 per four issues, be a Fledgling Booster; while \$10.00 per issue or \$25.00 per four issues makes you a Nestling Booster.

All contributions are tax deductible. Mail your check to NABS Boosters, P.O. Box 6295, Silver Spring, MD 20906-0295.

A Bluebird Success Story

Rita Finlay

For Portland area birders, a sighting of the diminutive Western Bluebird has become increasingly rare. Thanks to the dedicated volunteers who maintain and monitor hundreds of nest boxes, we may all have future opportunities to observe these delightful birds.

The Wildlife Care Center recently released two bluebirds who came to us from one of the monitored nest boxes on East Chehalem mountain. We would like to share their story with you.

In early May, Brenda McGowan, the trail monitor who was overseeing this particular nest box, noted six eggs present. Bluebirds spend 14 days in the egg and on 16 May she was rewarded with the sight of six healthy nestlings. Everything continued to progress normally and on 25 May, nine days after hatching, the young were ready for banding. At this time, Brenda found a Violet-green Swallow sitting on the nest. This was a source of concern since the two species are known to be competitors for nest sites. The young bluebirds seemed unharmed and Brenda thought this might just be a temporary anomaly. The following day brought no sign of the parents. The decision was made to wait one more day to give the nestlings every chance for a normal life. By 27 May, with deteriorating weather and no sign of the parents, the babies were pulled. Two were already dead and two of the remaining four would die later that day of hypothermia.

The next day Brenda brought the two survivors to the Wildlife Care Center. They were placed on heat and fed a standard baby bird diet every 30 minutes. They seemed to thrive, but after two weeks showed signs of muscle deterioration. After a consultation with Dr. Lintner, the diet was changed and they were also started on a Vitamin E supplement. This brought them back to

good condition, but it also prolonged the normal fledging time of 22 days.

Baby birds are often kept past their normal fledging time at the center because there is no role model for them to learn from, thus it was that the birds weren't released until 5 July. But what a spectacular release it was! Pat Johnston, another trail monitor, took them out to the Scholls area where it was known that bluebirds had recently fledged. The larger female immediately left the box and flew to a nearby tree, but the male stayed behind on the fence wire calling out to her. This brought two adult bluebirds to the area and soon they were attempting to feed the young male. After the youngsters' initial intimidation disappeared, they all flew off as a group. It is hoped that the adult bluebirds will pass on survival techniques to the young ones so that they will become viable members of bluebird society next spring.

This material first appeared in the Fall 1988 issue of "happenings," the newsletter of the Audubon Wildlife Care Center, Portland, Oregon.

Bluebird Song Available

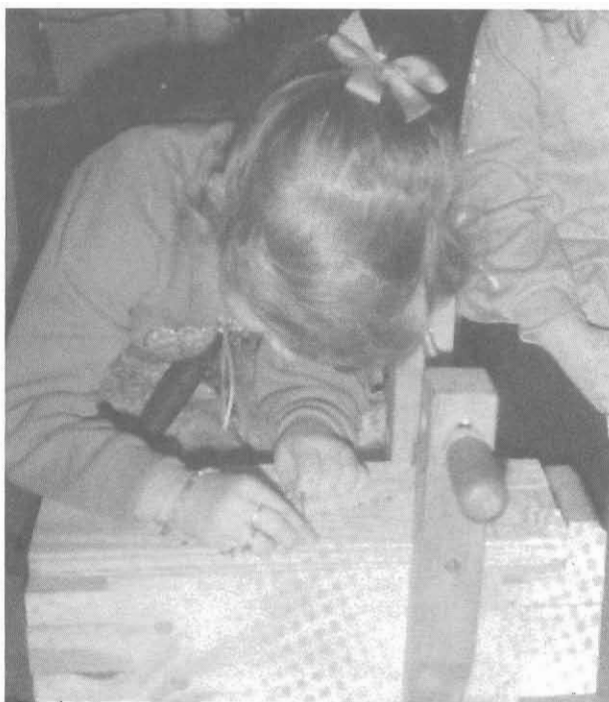
The bluebird is often mentioned in songs, but a song has never been written exclusively about the bluebird.

At the request of the North American Bluebird Society, Douglas Wood of Sartell, Minnesota, has composed "Bluebird, Fly." The song explains the plight of the bluebird in a touching, beautiful way.

Doug has composed songs for the National Wildlife Federation, Minnesota Tourism and the Wildlife Rehabilitators Association. He is well-known at nature centers and outdoor education organizations for his nature oriented songs.

This song will enhance slide shows. Used at the end of a program or with accompanying slides, it will leave your audience speechless.

Cassette tapes are now available at NABS headquarters for \$5.00.



For the past five years, each child in Sylvia Walker's kindergarten class at Crestline School, Hartselle, Alabama, has built bluebird nesting boxes in conjunction with a study about bluebirds. Her husband, Jim, an avid bluebirder, pre-drills nail holes in the scrap packing crate lumber. He has also made a jig which, when used with a wood clamp, enables the children to assemble their own boxes with little assistance.

The box building is part of a unit taught in February which incorporates the NABS slide program and extensive information about bluebirds. Two years ago the teacher across the hall caught the spirit and now joins in teaching the annual bluebird unit. In 1990 the two classes produced 50 boxes that went home to be installed.—*Sylvia Walker, 2101 Burningtreet, Decatur, AL 35603.*

Is That a Bluebird, Mother?

"Is that a bluebird, Mother?"

"No, that's a Blue Jay, dear.

A bluebird's like no other

And seldom seen up here."

"I think I see a bluebird.

It's blue and in the grass!"

"No, that's an old pop bottle

Dropped by people as they pass."

"Bluebirds live in houses,

There's one nailed on that pole,

Let's sit here very quietly,

It may fly out the hole."

They sat, they watched, they listened,

When out of nowhere flew,

What they had longed to see...

That little bird of blue.

"Is that a bluebird, Mother?"

"It is, for sure, oh yes!

Remember it forever,

That's the 'bird of happiness'."

—Carol J. McDaniel

The Mountain Bluebird

God plucked from out the sky one sunny day,

A scrap of blue, and angels heard Him say,

"I'll fashion, from this piece of universe

A creature, to be placed on planet Earth.

A creature, who to all mankind will bring

Much joy and hope, as winter turns to spring."

And so, with love and tenderness He wrought

A bird from that small bit of blue, and thought;

"Now from a tuft of cloud that hove in sight,

I'll make the breast of softest grey and white."

Then from a rippling stream He took the notes

The waters sang, and placed them in the throat.

The finished product He then set that morn

Upon a prairie field, and so was born

This lovely bird of blue to grace our land,

The mountain bluebird, fashioned by God's hand.

We must protect and treasure, as our right,

This winsome creature, sent for our delight.

—Hazel A. Bowie

Thirteenth Annual Meeting Report

Mary D. Janetatos

The Thirteenth Annual Meeting of the North American Bluebird Society was held on 27 October 1990 at the Ramada Inn, located near the historic Civil War battlefield and Eisenhower farm in Gettysburg, Pennsylvania. Moderator and program chairman Bob Bodine, of Media, PA, welcomed approximately 160 bluebirders from 19 states, four provinces and Bermuda. He introduced Ruby Finch, of Bailey, NC, who gave the invocation. Ruby read Psalm 8 which she characterized as "NABS' very own psalm." Ruby led the group in prayer remembering the dedication of the Civil War soldiers who fought and died for their noble cause and asked God's blessing on the "cause we are here for."

The first scheduled speaker was Kevin L. Berner, of Cobleskill, NY, whose topic was "Testing Anti-Raccoon Capability of Bluebird Nesting Boxes." Kevin is assistant professor of Fisheries & Wildlife Technology, State University of New York at Cobleskill. His work was financed with funds made available through a research grant from NABS. Kevin's observations were done using a captive (but not tame) raccoon which lived in a former chicken coop. Some interesting findings were as follows: the raccoon seemed able to climb up virtually any mount, including smooth PVC pipe; providing a lid which extended far beyond the front seemed to be the best deterrent; other box design features had little or no effect on the raccoon's ability to lunch on the contents of the nest box; the use of the plastic hole extender (Bird Guardian) was very effective; the Peterson (triangular) box, which was tested only in the most recent season, was more often used for nesting by swallows and bluebirds than standard designs. Audience participation revealed some thought-provoking statements and some chuckles. Heavily greasing the pole proved very effective as tested in Ohio, and the

odor of human perspiration repelled raccoons, but not bluebirds, in an experiment in Pennsylvania.

After a brief break, "Return of the Raptors" was presented by Robert Schutsky, senior research biologist, RMC Environmental Services, Muddy Run, PA. Bob has an extraordinary ability to entertain as he instructs. He brings a positive approach to the challenge of aiding in the recovery of two well-loved raptors: the Osprey and the Bald Eagle. Along the Susquehanna River in mid-southern PA, there exists much ideal habitat for both raptor species. The usual plan for aiding Ospreys is to construct towers, upon which pairs can build their nests. Nesting Ospreys were discovered in 1986 but on an electric tower. After describing the Osprey success story, Bob moved to the Bald Eagle recovery program. The first Bald Eagle sanctuary in the United States was established at Mt. Johnson Island in the Susquehanna River in the early 1970s. Success has been spectacular and 18 Bald Eagles at a time have been seen perching on a rock!

Jean Kling, Environmental Education Specialist with the Pennsylvania Bureau of State Parks, described the structure of the state parks system. She described the bluebird program begun in 1981 which has three objectives: restoring bluebirds to their natural environs, training volunteers through workshops, and collecting data on the nesting boxes placed in suitable parkland habitat. Jean stressed the need for dedicated volunteers, stating that the numbers of successful nestings (of all native cavity nesters) was in direct correlation to the numbers of dedicated volunteers.

Following a break for lunch, the business meeting, which included the presentation of awards, was conducted by NABS President Sadie Dorber, of Vestal, NY. She expressed the appreciation of all attendees to Art

and Nonnie Kennell and to Bob Bodine for the smoothly-run interesting program. Sadie then opened the annual business meeting. The slate of officers was presented by Nominating Committee Chairman Lillian Files of Tyngsboro, MA. The slate of officers and board members submitted by the committee and distributed earlier to NABS members was elected unanimously. Award honorees will be discussed in a separate article.

"The Vultures of Gettysburg" presentation done by Harold Greenlee, Natural Resource Specialist at Gettysburg National Park, provided a change of focus for the attendees. He attributed the upsurge in the resident population of Turkey Vultures and the influx of Black Vultures to the fact that a thousand dead horses were ready for the scavenging efforts of the carrion eaters following the Civil War battle. In answering a question from the audience, Harold explained that human dead from the battle were recovered after each day's cessation of battle during a truce period before darkness.

After a break, Art Aylesworth of Ronan, MT returned the focus to our banner bird with his talk, "A History of Mountain and Western Bluebird Recovery." Co-founder with Duncan Mackintosh (Lethbridge, Alberta) of Mountain Bluebird Trails, Art has masterminded the building and distribution of tens of thousands of nesting boxes which have been used by both Western and Mountain Bluebirds in the Rocky Mountain states and provinces.

The last presentation of the afternoon program was given by Art Kennell: "Bluebirds at the Eisenhower Farm, Gettysburg National Park." Art, who was a caddy for Ike, as a golf course manager erected a modest number of nest boxes at both the farm and the battlefield. He has seen a productive return on the "investment" in the flocks of bluebirds in the area.

A social hour preceded the banquet. Following the banquet, James J. Brett, curator, Hawk Mountain Sanctuary, Kempton, PA, was the featured speaker. His talk highlighted the work of Hawk Mountain founder Rosalie

Edge. She reacted to the immense numbers of hawks slaughtered frivolously at the site of the mountain which became the sanctuary it is today. At present, the curator's efforts involve bringing people of disparate, even inimical backgrounds together as the global perspective of the environment is discussed.

Bob Schutsky arranged field trips on Friday and Sunday which were graced with perfect October weather. On Friday the trips were a guided bus tour of the battlefield and the Eisenhower Farm as well as a birding trip to Codorus State Park/Lake Marburg area. Sunday morning provided opportunities for church services and a field trip to Tuscarora State Park. As the meeting drew to a close, these sentiments as they appeared on the back of the attractive program most likely expressed the feelings of the attendees: "May God Bless us all, and may we always have Bluebirds Flying over His Rainbow." ■

Tenth Anniversary Issues Available

The tenth anniversary issue of *Sialia*, which was sent to all members a few months ago as a membership bonus, is now available singly or at special prices for multiple copies.

Single copies are \$2.50. In larger multiples they are 4 for \$7.50, 10 for \$15.00, and, if a minimum of 25 are ordered, they are \$1.00 each. All prices are postpaid.

This one issue contains a wealth of bluebirding information in a concise form and is designed to compliment *The Bluebird* by Lawrence Zeleny. It is of particular value to individuals who present the NABS slide show or who organize a bluebird workshop.

Send orders to NABS, Box 6295, Silver Spring, MD 20906-0295. ■

Awards Presented

The North American Bluebird Society annually recognizes bluebirders who have made major contributions to bluebird conservation. The following award plaques were presented on 27 October 1990 at the Thirteenth Annual Meeting in Gettysburg, Pennsylvania:

Pennsylvania Department of Environmental Resources-Bureau of State Parks

***Hazel Bird
Ray Briggs
John Findlay III
Tommy Outerbridge***

The **Lawrence Zeleny Award** was made to the ***Pennsylvania Department of Environmental Resources-Bureau of State Parks***. The bluebird program was started in the state parks in 1981. Presently, 50 parks participate in this program. Two thousand boxes are in place across the state. The program has fledged 13,000 bluebirds and has been a means of introducing uncounted park visitors to bluebird conservation.

John and Norah Lane Awards for outstanding contributions to bluebird conservation by individuals were made to the following people:

Hazel Bird of Harwood, Ontario, founded a restoration project in 1966 to help the recovery of the Eastern Bluebird. Working with the Willow Beach Field Naturalists with whom she was affiliated and joined by a few friends, Hazel had 224 nesting boxes in place by 1970. She spends the winter building boxes claiming that "building the nesting boxes is a great way to spend winter days, with the bluebird season on the horizon." Norah Lane says that Hazel has been the leading light and inspiration for the bluebird revival in the Harwood region.

Ray Briggs of Cobleskill, New York, has reached many people as a teacher of a high school conservation class. Bluebird conservation has been incorporated into this class for years. In 1985, Ray founded the Schoharie County Bluebird Society. Its leadership enables that county to annually fledge more bluebirds than any other in the state. His goal, to make Schoharie County the bluebird capital of New York, has certainly been achieved. Young people from earlier classes are now bluebirders in the county and have become leaders in other conservation areas as well. Ray is presently the president of the Upstate New York Bluebird Society.

John Findlay III of Birmingham, Alabama, has been interested in bluebirds since he was a Boy Scout. In 1977, he started his Alabama trail with seven boxes. His current trail of 180 boxes has fledged more bluebirds than any other trail in Alabama. In addition to box monitoring, he has been an effective publicist through the media and has spoken to various groups. In addition to serving as a director for NABS, he has been named "Hometown Hero" and "Hero of the Month" by local radio and television. The main thoroughfare in Oak Mountain State Park has been named "John Findlay III Drive."

Tommy Outerbridge of Bermuda founded the Bermuda Bluebird Society. More than any other single individual he has made the entire island aware of bluebirds. He wrote the song, "Mr. Bluebird, Blue," which helped to rally support for the island's remnant bluebird population. Tommy was seriously injured during the summer of 1984 when he fell from a cliff while making holes for another cavity nester, the White-tailed Tropicbird. He still remains active in bluebird conservation having initiated the program BEAM (Build, Erect, And Monitor) in the local schools. ■

—Sadie Dorber



Photograph by Kevin L. Berner

President Sadie Dorber presents award to Ray Briggs of Cobleskill, New York.



Photograph by Kevin L. Berner

Environmental Education Specialist Jean Kling, left, accepts award from President Sadie Dorber on behalf of the Pennsylvania Department of Environmental Resources-Bureau of State Parks.



Photograph by Myrna Pearman

Executive Director Mary D. Janetatos presents award to Tommy Outerbridge of Bermuda.



Photograph by Myrna Pearman

Joe Hurst of Pt. Stanley, Ontario accepts award from Executive Director Mary D. Janetatos on behalf of Hazel Bird.



Photograph by Kevin L. Berner

President Sadie Dorber presents award to John Findlay III of Birmingham, Alabama.



Award winner Hazel Bird of Harwood, Ontario nails metal guard to top of post so mammals cannot use it as a "launching pad" while volunteer on right applies stain.

BLUEBIRD EXPRESS

SIALIA welcomes the correspondence of its membership. Bluebird Express should become a forum for all who are interested in communicating their ideas and actions concerning bluebird conservation. We will attempt to publish a wide range of views in a responsible manner. Keep your letters coming!

Dear Editor:

That was an interesting and informative article in the Summer 1990 issue of *Sialia* concerning construction of bluebird boxes from California grape crates.

I have been doing this for several years. I use the ends of the boxes, save the nails, and give what I can't use to my neighbors for kindling.

As a paint salesman, I call on several lumber companies and most of them have a pile of scrap wood. Their scrap wood is fine for my bird box construction. I also collect discontinued paneling samples from the lumber dealers which I use for making the fronts of my boxes. With a couple of coats of paint, these fronts will last for several years. I glue cleats on the inside to make it easy for the young birds to emerge. The front is fastened to the box with four one-half inch tapping screws which makes it fairly easy for me to open but somewhat difficult for vandals to do so.

Hobart Ellifritt
427 Stealey Ave.
Clarksburg, WV 26301

Dear Editor:

As I live in the residential section of a small town, I have little opportunity to erect bluebird boxes, but a few years ago I placed a House Wren box on my property. In the spring of 1990, a male House Wren perched on the box and began his mating call. The wren was not there long when two big starlings drove him away from the box. The wren did not return.



Perhaps my experience with the wren and the starlings explains why so many people are left with empty bird boxes. The European Starling is the most fully obnoxious bird I know. *Sialia* continues to print a lot of warlike words about wrens and Tree Swallows and ignores starlings. I once saw a sparrow hawk eating a starling and said, "Thank goodness."

Joseph E. Suthren
306 Stanley St.
Port Colborne, Ontario, Canada
L3K 3A2

Dear Editor:

Don't know who is responsible for "Bluebird Trouble Shooters" in *Sialia*, Winter 1990, but would like to comment on how effective it's been here in the Northeast. It really has helped folks in our six New England states. I have gotten an unbelievable number of phone calls thanks to this article. NABS has done a great service for inexperienced bluebirders by assembling these contacts.

Lillian Lund Files
Windwept Acres
Tyngsboro, MA 01879

Dear Editor:

Mrs. Ralph Perry described the following incident to me.

One day when she was sitting in her living room near her fireplace, she heard the unmistakable song of a young bluebird. She figured that there was only one place it could be—in the chimney. She opened the chimney draft. The song became louder, but she couldn't see or reach the bird. She tried

several more times managing only to cover herself with soot. Then she just took the bull by the horns and pulled the draft out. Out also came soot, dust, dirt, and the bluebird which was covered with soot. It was none the worse for wear, although she had a hard time holding it so she could let it out of the house. Her comment was "Next year we will cover the chimney so the bluebirds won't get caught. I just love those birds."

Lucille K. Beale
16309 Four Points Bridge Rd.
Emmitsburg, MD 21727

Dear Editor:

I have built and put up bluebird houses for more than 20 years. The first ones were built of scrap lumber. Now all are made of cedar as I want them to last a long time.

One day in early May 1989, I was in my garage and had 10 bird houses lying on a work bench. The door was open. I looked up and saw a bluebird in the garage looking over one of the boxes. I had believed that bluebirds would not nest in a city. The next day I put a house up in my backyard. A pair of bluebirds moved in and had a nest within 48 hours.

They returned on 2 March 1990. I had two houses up which were located eight feet apart. In no time the sparrows moved in and took over both boxes. I took the nests out and put a wooden mouse trap in each house and watched them closely. It took only two days to scare the sparrows away.

J.E. Fitzgerald
2910 SW Arvon Pl.
Topeka, KS 66614

Dear Editor:

I recently read an article in the North Carolina Bluebird Society newsletter (June 1990) entitled, "Protect Bluebirds Without Threatening Other Native Species." I agree with this editorial and believe NABS should adopt a certain code of ethics in regard to native species, i.e., black rat snakes are very rare in Ontario, but in Texas they are often killed using special traps set up around nest boxes.

It is the responsibility of bluebirders

through proper placement and design of nest boxes to alleviate some of the problems that native predators cause. I don't believe we should be protecting one species at the expense of other native species.

With non-native species the situation is different. House Sparrows and European Starlings should not be allowed to nest in nest boxes successfully.

William F. Read
165 Green Valley Dr. #2
Kitchener, Ontario, Canada N2P 1K3

Dear Editor:

I have three bluebird boxes in my backyard. For the last two years, the box of preference has been the one closest to the house. This year two broods were raised, each brood consisting of four nestlings.

I observed the parent birds bringing food and removing waste. They appeared to be very adroit and proficient as I watched them skillfully overcome the harassment of a persistent mockingbird. Every time that I checked on the nestlings they appeared to be healthy. Though I missed seeing the babies fledge both times, I concluded that both nestings were successful. I say this in spite of the ominous figure (a black snake coiled in the box) in the photo I am enclosing.

The final and unmistakable evidence that both broods had fledged was that in both cases, the nest was flat and compacted, perfectly clean of feathers and feces but containing a single beetle, the last offering of the attentive parents. In the second case, I first had to evict the unwelcome visitor to clearly see the bottom of the nest box.

The young black snake had probably entered the box to escape the heavy downpour occurring the two days previously. Though a sinister scenario can easily be imagined and though his kin are often responsible for the demise of many bluebird young, I don't believe that, in this case at least, the visitor was guilty of anything more than trespassing.

Henry M. Ditman
2800 Sykesville Rd.
Westminster, MD 21157

Bluebird Tales

Mary D. Janetatos

What an exciting homecoming for this Pennsylvanian! The Thirteenth Annual Meeting of the North American Bluebird Society held in Gettysburg, 25-27 October was wonderful. As **Larry Zeleny**, NABS founder, and I were driving through the Gettysburg countryside on Friday morning, the Ramada Inn marquee suddenly beckoned, "Welcome North American Bluebird Society." We found ourselves involved in the process of unpacking, registering and greeting all of the attendees, seasoned and new. **Irene** and **Thomas Frantz** of Gettysburg took us to their lovely home. It was a heartwarming insight into the life of these two bluebirders as they regaled us with the exciting events of their many years together and the projects they are now involved in. A NABS charter member, Irene now adds the distinction of life membership to her bluebirding efforts.

Back at the annual meeting, the next day's activities were enjoyed. Among the tried and true bluebirders not usually able to attend these meetings were **Anne Sturm** of Barnesville, MD, a past president of the society; **Sister Barbara Ann** of Catonsville, MD, author of *Beakless Bluebirds and Featherless Penguins*; and **Tommy** and **Angela Outerbridge** of Summerhaven, Bermuda. All have exerted benign influence on bluebird conservation. Tommy continues his heroic battle against the paralysis he suffered when he fell from a cliff in Bermuda while aiding the White-tailed Tropic bird. He stirred memories and touched hearts when he gave an impromptu acappella rendition of "Mr. Bluebird Blue." Bluebirds continue to benefit from Tommy's attention, and plans are under way to have the Fourteenth Annual Meeting in Bermuda in late October of 1991. Stay tuned for details!

Even as Tommy's bluebird legacy continues in Bermuda, the bluebird legacy of others not still with us can be noted with joy. **Ken Karnas** of Sussex, NJ, carries on the work begun by **Junius Birchard** of Hackensack, NJ. Ken received his bluebird training from Jun and uses it as he teaches fourth grade children in central New Jersey. Can their combined success reach as far north as Sussex County? **Alice F. Martin** of Vernon, NJ, reported, "This year, for the first time in our 18 years of living here, we



had a pair of bluebirds nesting in a bluebird house near our bedroom window."

Swinging out to Bessemer, MI, **Ann Perpick** wrote of her late husband, **John's**, work with bluebirds. In the last 20 years he had built, erected, and monitored over 400 nesting boxes in the town of Silver Cliff until his death 26 July 1990. Ann says that she and many friends continue John's work and that a memorial will be set up in the near future at Silver Cliffs. Another formidable bluebird benefactor was **J.P. "Perk" Perkins** of Conneaut, OH, who passed away 20 February 1990. His bluebirding was done after a career as a tug boat pilot on Lake Erie. Closer to home, **John G. Davidson** of Barnesville, MD, a benefactor of bluebirds through his prodigious efforts building and distributing nesting boxes left this life during the summer of 1990. His cheerful service and devoted friendship to us here at NABS will be deeply missed.

Life goes on in wonderful ways as reported by **Trish Egan** of Wayne, PA. Trish is a fifth grade teacher at New Eagle Elementary School who saw NABS' address in a *Ranger Rick's* magazine. Trish's class project was reported in the "Spotlight" section of the "Suburban" newspaper in March 1990. We await news of occupants of the 11 boxes set out in the school's first bluebird trail.

Allison Herndon of the Fort Zumwalt School district in O'Fallon, MO, sent a copy of "Conservation Connection," put out by the Missouri Department of Education. The conservation newsletter outlines concisely the NABS bluebird conservation program. Spearheaded by teacher **David A. Rothermund** of Smith-Cotton High School in Sedalia, MO, he summarizes the program in this way, "This activity incorporates the concepts of recycling, mass production, wildlife management, and teamwork into an educational activity which also helps to promote good will and enhance public rela-

tions."

Missouri has long had **Mike Hackenwerth** of Ozark Jr. High in Ozark who recently wrote, "I teach a seventh grade unit on mass production; the students mass produce bluebird houses. During the past 12 years, my students have produced 1440 houses. They form their own corporation, issue stock, and market the houses."

From **Dana Saluga**, bluebird activist of Abingdon, MD, comes the report of North Harford Elementary where fifth grade teacher **Sylvia Hutt's** class teamed up with **Ray Poole's** environmental science class at North Harford High School. With parental assistance in cutting out nest box pieces, the group of about 50 students brought the cut pieces to the picnic area at Rocks State Park in late September to nail the boxes together. "Ranger **Peggy Eppig** gave our kids some environmental education and we thought spending the time here was a good way to help teach the lessons about wildlife habitat," said Mrs. Hutt.

Donna Finnestad, of Marysville, British Columbia, joined NABS recently; her note and the brochure she enclosed told a "bluebird tale." All the members of the club to which she belongs, the Rocky Mountain Naturalists, purchased Larry Zeleny's book, *The Bluebird*. They use it as their reference book for the trail they maintain on the nearby farms and ranches. The brochure's information is provided under clever headings such as "Singing the Blues" to describe the decline of the Mountain Bluebird, "Out of the Blue" outlining the beginning of man's help, and "The Wild Blue Yonder" describing the group's project.

From The Fairfax (VA) Retirement Community came **Annie V. Hendricks'** letter. "I became interested in the bluebirds last August 1989 when I spotted four of them beside our lake. Had six boxes put up and in place by February 1990. March 11 saw the first pairs checking out the boxes. As of today we have had a brood of five....All of the residents here are very excited about the bluebird trail."

Nick Rini, from Hartsville, OH, remarked on the article in the Autumn 1990 issue of *Stalia* which described the use of wood from grape crates in building nesting boxes. He stated, "I've been making bluebird boxes out of pallets for a good many years. I get the pallets free. It costs the lumber company a high price for getting rid of scrap and trash so I have sort of a contract with them. They put the pallets beside the dumpster instead of in it. I pick them up."

Carole J. McDonald of Mt. Airy, MD, wrote about the first bluebird box put up by

her husband. Success was theirs as four out of five eggs hatched and fledged successfully. She said, "The bluebirds gave us many hours of pleasure and enjoyment. They are absolutely beautiful and seem to watch us as much as we watch them!"

Long-time bluebird activist **Don Kopff** of Beaver Dam, WI, wrote of his involvement in the fifth annual Wisconsin bluebird meeting at Cardinal Stritch College in Milwaukee in September 1990. He is one of the coordinators for the bluebird program in Dodge County and speaks frequently to many clubs. The local Beaver Dam Senior Citizens Workshop has made over 5000 boxes in the past five years and has orders for 2000 this winter.

Another long-time NABS supporter, **Betty Goldman** of College Park, MD, president of the Berwyn Woman's Club, sent a generous donation on behalf of the club. She said, "No group supports your endeavors more wholeheartedly!"

Remarkably, we heard recently from **Carol A. Casperson**, board member of the District of Columbia's affiliate of Habitat for Humanity. This enterprise is the brainchild of President Jimmy Carter who, with Rosalyn Carter, still builds homes around the country and the world. Carol wrote with a request. "Recently, I contacted the Audubon Society about plans for bird houses. The society sent your brochure, 'Where Have All the Bluebirds Gone?' We have made a sample bird house according to your plans and the crew likes it very much. We didn't want to proceed any further without asking your permission to build and sell bird houses for bluebirds following your plan. We would also like to include one of your lovely brochures with each bird house." NABS is delighted to grant permission for this venture and proud to act in solidarity with this humanitarian cause.

John Monroe of the U.S. Soil Conservation Service in Purvis, MS, has been a bluebird for a good while. He sent news of a unique happening at the Paul B. Johnson State Park, about 20 miles south of Hattiesburg, MS. There, dedication ceremonies were recently held for a new chapel for Camp Bluebird, a camp for adult cancer patients. Supplies and materials were donated by various individuals and organizations. It is the only Camp Bluebird chapel among the many camp locations throughout the South.

May the God of all creation bless all those afflicted with cancer and all those endeavoring to extend a helping hand everywhere. ■

NORTH AMERICAN BLUEBIRD SOCIETY, INC.
STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
NOVEMBER 1, 1989 THROUGH OCTOBER 31, 1990

Cash Balance-November 1, 1989 \$183.00

Add:

Cash Received

| | | |
|--|-------------|------------|
| Sale of <i>Sialia</i> Magazine | \$28,614.00 | |
| Sale of boxes, books, stationery, etc. | 51,246.51 | |
| Contributions | 20,407.56 | |
| Membership Dues | 31,281.60 | |
| Sales Tax Collected | 367.72 | |
| Savings account (Maryland National Bank) | 1,000.00 | |
| Bank credits | 66.50 | |
| Annual Meeting | 5,640.00 | 138,623.89 |
| | | 138,806.89 |

Less:

Cash Disbursements

| | | |
|--------------------------------|-----------|------------|
| <i>Sialia</i> Magazine | 30,169.20 | |
| Boxes, books, stationery, etc. | 42,795.83 | |
| Educational material | 12,669.76 | |
| Membership fulfillment | 14,028.06 | |
| Research | 5,968.05 | |
| Salaries | 6,559.30 | |
| Expense accounts | 15,900.00 | |
| Office supplies | 401.20 | |
| Maryland sales tax remitted | 394.57 | |
| Payment on loan | 2,000.00 | |
| Bank charges | 98.90 | |
| Annual Meeting | 4,315.08 | 135,299.95 |

Cash Balance-October 31, 1990 3,506.94

Assets:

| | |
|---|-----------|
| Checking account (Citizens Bank & Trust) 10-31-90 | 3,506.94 |
| Savings account (Maryland National Bank) 9-10-90 | 1,378.50 |
| Value of inventory 10-31-90 | 26,719.20 |
| Investments-Dean Witter Reynolds 9-26-90 1,962.027 shares @ 8.69 | 17,050.01 |

Net Worth 48,654.65

Respectfully submitted,

Delos C. Dupree

Delos C. Dupree, Treasurer NABS

Art Credits

Jon E. Boone: 2, 36
 Suzanne Pennell: 22, 38
 M. Suzanne Probst: 20, 23

(Boosters--continued from inside back cover)

| | |
|-----------------------------|--------------------------|
| Don Rhodes | Richard & Linda Taylor |
| Rosemary Z. Rittler | Van Thompson |
| Frank B. Schley, Jr., M.D. | Cheryl Smith Tolley |
| Dorene H. Scriven | Blondell Tucker |
| William E. Selier | Mr. & Mrs. Bryant Wolf |
| Dean E. Sheldon, Jr. | Kevin White |
| Glenn H. Sikes | Robert D. Williams, M.D. |
| Myra E. Simpson | Jeanne Wright |
| John W. Skooglund | Nestling |
| Pat Soehnen | |
| Mr. & Mrs. G. J. Tankersley | David Claussen |

BLUEBIRD BOOSTERS

Life Members

Mrs. Irene S. Frantz
Clark W. Hart
Charlotte Jernigan
Katrlna Renouf
John H. Rogers

Eastern Bluebird

Sarkis Acopian
Robert E. Ahearn, M.D.
Cathleene E. Alden
Mrs. Elizabeth Anderson
David Bagley
Mrs. Nancy Baron
Mr. & Mrs. Paul Beach
Anne Bent
Harry Bibb
Gary Black, Jr.
H.J. Blair
Bluebird Society of Bella Vista
Robert L. Bogle
Warwick P. Bonsal, Jr.
Mrs. M.W. Bouwensch
Millicent B. Bowerman
Mrs. Hilda E. Bretzlaff
Mr. & Mrs. Gerard W. Brooks
Dr. Shirl Brunell
Lylla Bryant
George C. Buzby, Jr.
Edith F. Camp
Doris Casper
Eclesia J. Cestone
Mr. & Mrs. Floyd Chase
Adrienne Ryder Cook
Kristine Crutch
Sophie L. Dangtran
Carol Daugherty
John G. Davidson
G. Dunn Davis
Charlotte Diedrich
Mrs. Coleman Donaldson
Patricia N. Dubois
Willard Duckett
Haskell Duncan
Mrs. Paul J. Eakin
George Elkins
Peter & Theresa Elmendorf
Lillian Lund Files
Mrs. Betty G. Fisher
Elwood L. Fisher
Pat Givens
Ms. Vivian Glenn
George N. Grant
Dr. Roberta Gray
Morris M. Green, Jr.
Cheryl A. Guilzon
Gunston Land Co.
T.E. Gurley
Mr. & Mrs. George Harmon
Lynn Harwood
L. Edward Haws, Jr.
Miss Georgia Hariton
Mr. & Mrs. Dennis L. Hayford
D.E. Heald
Bryan C. Hebbeler
Joan Heilman
Dana L. Heisey
Nolan & Rosamond Hughes
Fred A. Huntress, Jr.

Wilbut O. Huth
Kenneth W. Jacobs, Jr.
Charlotte Jernigan
Larry & Betty Jernigan
Mrs. R.N. Jespersen
Pauline R. Kasserman
Martha Keating
Kingsely Kelly
Adeling F. Kempner
Elizabeth S. Kimberly
John & Linda Knowlton
Louise Kuerner
William R. Kuhl
Cathryn Kurtagh
Joan Lane
Robert J. Lavell
Doug & Ethel Marie LeVasseur
Ron Ligon
Aletha J. Lindstrom
J. Lint
Ms. Felicia Lovelett
Dwight E. Lowell
Fred & Jeanne Lutz
Deborah Lynch
Dawn Maclaren
Mr. & Mrs. Jesse G. Manley
Robert W. Maris
Mrs. James H. Marshall
D.S. Masland
Charles A. Mauldin
John S. McCall
Richard McGovern
Mrs. Betty McIlwain
Bruce McNaughton
J. Kent McNew
Rosch & Mikler
Maxine & Royal Montgomery
Thomas Morris
Willetta Morris
Aurelio Nepa, Jr.
Nancy Ogg
David B. Oliver II
Harry B. O'Rear
Robert E. Orthwein
CWE Paine
Larry & Robin Palmisano
Mrs. William A. Porter
R. Cynthia Pruett
Grant C. Riddle
Dori Selene Rockefeller
Roger E. Roberts
Marvin & Mary Rubin
Ernest R. Ruterma
Clovis L. Ryan
Carolyn A. Schwab
Mrs. Sally Sears
Betty Shaul
Percy R. Shinn
Yvonne G. Shore
Elizabeth F. Sirmans
Mrs. Susan L. Sloan
Russell C. Slutz
Dr. & Mrs. Wayne Spiggle
Gene Stricklin
Martha R. Sullivan
Kenneth O. Tatro
Mary Teets
Chris Thoma
Isabelle & Stanley Thomas
Upstate New York Bluebird Society

Robert Vanderkloot
Shirley VanProoien
Sue Wells
Norma K. Williams
John & Gayle Wix

Mountain Bluebird

Donna R. Hagerman
Linda Vidal

Western Bluebird

Myrle Linnell
William B. Watling

Fledgling Bluebird

Raymond L. Allison
Donald F. Anderson
Arrow Wiring Contractors
Augusta Bird Club
Mr. & Mrs. Edward A. Bagley
Brenda Baldwin
Mrs. Henry N. Barkhausen
Allan Bentley
Ms. Clara Berchtold
Judy Bland
George Boos
Sarah S. Braunwell
J. William Bruner
Alicia Campbell
Mrs. Betty L. Conner
Joyce & Joseph Coyne
Paul Detweiler
Ann Donaldson
Mrs. Coleman Donaldson
Mr. & Mrs. Malcolm Dorber
Francis M. Dorer
Benjamin B. Fogler
Suzanne Franklin
Dee Friar
Bill Garner
GFWC Berwyn Woman Club, Inc.
George Gurda
Mr. & Mrs. George Harmon
Jane & George Hausch
Dana L. Heisey
Regina J. Karr
Mary P. Kassenbrock
Ron E. Kingston
Virginia C. Kost
Mr. & Mrs. H.R. Lampshire
Anne Ledbetter
Mrs. William G. Lehl
Mrs. Marty V. Leonard
Mrs. Edward Leroy
Mr. & Mrs. George Luce
Mr. W.T. Mattison
Amy R. Mitchell
Marjorie Mountjoy
Kenneth M. Nagler
Mr. & Mrs. George Nalisnik
L.E. Nelson, Jr.
Dottie Nesmith
Sue Holly Newman
Roger Peloquin
Gayle C. Reddick
Harold & Julia Reinsma
James H. Resau, Ph.D.
(Continued on page 40)

Founded in 1978, THE NORTH AMERICAN BLUEBIRD SOCIETY is an incorporated non-profit organization determined to increase the populations of the three species of bluebirds on this continent. Inasmuch as the populations of these birds have diminished due to the maladroitness of human beings, as well as natural disasters, the primary objective of the Society is to educate all who will listen about the importance of preserving these singular creatures in their native environment.

Toward this end, the Society will work, within the bounds of effective conservation, to study those obstacles impeding bluebird recovery; to publish results of those studies; to promote ideas and actions which might reduce the effect of those obstacles; and to obtain a more complete knowledge about bluebird ecology, in the hope of learning more about the ecology of humankind.

Membership: Student (under 21) \$10.00; Senior (over 60) \$10.00; Regular \$15; Sustaining \$30; Supporting \$50; Contributing \$100; Corporate \$100; Donor \$250; Life \$500. Add \$2 per year for Canada and Mexico and \$3 per year for other countries (Surface mail). U.S. funds only, please. Amounts over \$6 are tax deductible.

Address:
North American Bluebird Society
Box 6295
Silver Spring, MD 20916-6295

