

Sialia

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The Quarterly Journal
Of
The North American
Bluebird Society



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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 **Motacilla** 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.

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Sialia

The Quarterly Journal
About Bluebirds

Volume 3, Number 2
Spring 1981
Pages 41-80

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COVER

Our cover artist is Shirley Eley Nachtrieb of St. Charles, Missouri. Her subject is "Fledglings."

SIALIA welcomes the submission of articles, artwork and photographs for publication. Although this journal is dedicated primarily to the bluebird, material relating to native cavity nesting species will also be considered. Manuscripts should be neatly typed and double spaced. All material submitted for publication is subject to editing or rewriting. Include a duplicate copy if you wish to proof the manuscript before publication. All manuscripts will be acknowledged. Black and white glossy photographs or negatives are preferred. Print the subject, names of any individuals pictured, photographer and return address on back of each photograph. Before preparing tables, graphs or other display material, please check with the editor about the requirements of our reproduction process. Art is welcome and should be in black pen-and-ink. The editor's address is 10617 Graeloch Road, Laurel, Maryland 20810.

Presidential Points

George N. Grant:

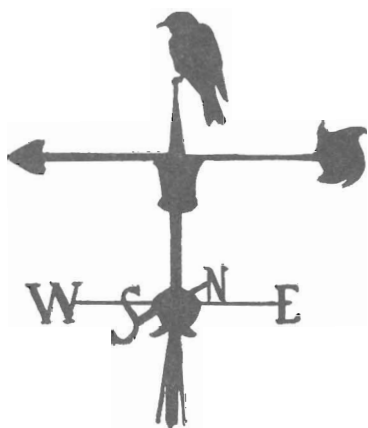
The greatest asset any organization has is its dedicated members. The North American Bluebird Society has indeed been fortunate so far in the number of members who have contributed so much time, energy, money, and talent to help the bluebird.

NABS must be constantly looking to the future. If our organization is to grow from its present 1500 members, it needs your help. Perhaps you are not sure *how* you can help; maybe you simply need a little extra encouragement to become involved. If that is the case then here are a few ideas to get you started.

Make a list of all the birders or nature lovers you know. Mail the list to NABS' headquarters in Silver Spring so literature can be sent to each individual. Better yet, *you* ask for the literature and *you* send the material.

Go to local libraries and schools. Work with the librarians, the individuals in the science department, and the elementary grade teachers who are presenting nature study or ecology units. Check to be sure the school wood-working shops have accurate bluebird nest box plans.

Volunteer to help in local nature centers for they are excellent places to reach interested individuals. Post bluebird literature on community bulletin boards. Build a bluebird display for use at civic events, in public buildings, at fairs, in malls, etc. Contact local or regional newspapers and periodicals as they are often looking for articles.



If you like to build nesting boxes but have no place to mount them, put them on a friend's property in the country. If you don't know anyone in a rural area, donate the boxes to an individual or group who could erect them. Remember that each box made and erected in *suitable habitat* is a potential bluebird home.

If you enjoy public speaking, prepare material on bluebirds and other cavity nesters and speak to local groups. Consider purchasing a bluebird slide program for speaking engagements. The initial \$50 cost of the program could be recovered by charging a small fee when you present it.

Is art or some form of handicraft one of your talents? Many members produce highly original items using bluebirds as a theme. This helps to further present the idea to the general public.

Consider writing an article for *Sialia* detailing your own bluebird experiences. And, if you can, make a financial contribution to further NABS' work.

Feel free to contact the headquarters for assistance or to offer your services and ideas. Your involvement and help are essential. Remember, the North American Bluebird Society is *your* organization, too. ■

REDUCING PREDATION ON BLUEBIRD TRAILS

D. Daniel Boone

This paper was presented November 9, 1980, at the Third Annual Meeting of the North American Bluebird Society.

In 1934, T. E. Musselman initiated the science of artificial cavity management. He perceived the bluebird population to be declining because of the loss of nesting sites and competition with House Sparrows (*Passer domesticus*) and European Starlings (*Sturnus vulgaris*). To help increase the bluebird population in his area he erected and regularly monitored bluebird boxes along country roadsides—the first bluebird trail. Today, there are trails hundreds of miles long, and from one to several trails in nearly every state and province of North America. Since Musselman's time, bluebird trail operators have recorded a sizeable percentage of their bluebird nests failing because of predation. Surely if predation could be checked, then a trail could produce many more bluebirds, and every bluebird saved would help offset the continuing decline of this species.

In order to reduce the incidence of predation, bluebird trail operators have experimented with many techniques. Today, there are only two widely used methods of "predator-proofing" a nesting box. These involve either making the box contents inaccessible or the box itself unreachable to the predator. I will discuss both of these methods and, following that, will offer a very different approach to reducing the incidence of predation.

The most effective technique to "predator-proof" a box is to prevent the predator from reaching the nesting box. This is usually accomplished by erecting the box on a structure that the predator cannot ascend. Many bluebird trail operators feel the best way to erect a bluebird box is to mount it on a thin metal pole. In this manner the box

can be placed anywhere desired. The bluebird would not be restricted to convenient fenceposts or telephone poles and could saturate the available habitat with nesting boxes, thus offering more utilizable bluebird territories. The metal pole has anti-predator value as well. Its thin diameter is a deterrent to terrestrial predators, but certainly it does not prevent ascent.

A baffle can easily be added to the pole which can reduce or eliminate predation. A baffle *could* be a heavy coating of grease on the pole. This sticky, goopy barrier will stop most four-footed predators. However, there are many accounts of Black Rat Snakes (*Elaphe obsoleta*) going up a greased pole and into the box, leaving a tell-tale glob of grease around the entrance hole. Experimentation with additives to the grease, such as cayenne pepper, may prove to be a successful deterrent to snakes, but much more research is necessary.

Other baffles, such as the flat or conical predator guard (see Figure 1), can be fitted to any post or pole and, if placed high enough above ground, will effectively eliminate predation. However, equipping 20 or 30 bluebird boxes with poles and baffles represents a considerable investment of time and money. Many trail operators would, justifiably, feel hesitant about going to such elaborate means—especially if the boxes could not be protected from vandals.

Fortunately, there are vast areas of prime bluebird habitat with available fenceposts and poles on which to place nesting boxes. Most bluebird trails follow the borders of pastures with the boxes spaced 100 yards apart on posts along fences. Bluebirders recognize that most bluebirds nest and raise young in these same wooden fenceposts, so the extra trouble of

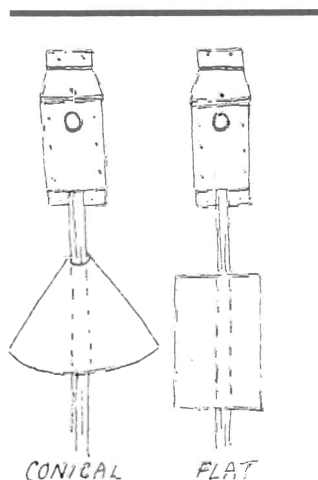


Figure 1. A flat or a conical metal baffle will prevent a predator from reaching a box.

erecting poles is probably not worth it—especially if that added effort could be better spent making more boxes to erect. Grease, unfortunately, will not work as a baffle on wooden posts because it dries out rapidly. Bluebirders using these posts can still do something about predators, albeit only four-footed ones. Increasing the depth of the nesting box cavity from six inches to ten or twelve inches would probably keep the nest and its contents out of the reach of an investigating paw. This would require much more lumber for each box. A more economical approach is the use of a raccoon guard (see Figure 2). This is a block of wood one to two inches thick with a 1 1/2 inch hole bored through it and mounted over the existing entrance hole of a bluebird box. The added thickness is thought to prevent the raccoon from bending its foreleg when reaching into the box. It is unable, then, to extend its paw down much below the level of the entrance hole. Increasing the depth of the cavity or attaching a raccoon guard may prevent the raccoon or opossum from having a bluebird dinner, but it is not clear how the attack affects nesting success. If a

raccoon unsuccessfully raids a bluebird house with a female on the eggs or young, will it create sufficient terror to cause her to abandon that box? Clearly, the best way of reducing predation on the bluebird trail is to minimize the chance of predator-bluebird interaction. The different approach to reducing the incidence of predation is to realize that the human visitor leads predators to the nest.

Jonathan Bart wrote a very interesting article in *The Living Bird*, 1977, entitled the "Impact of Human Visitation on Avian Nesting Success." He used data from the Cornell Nest Record Card Program (see Figure 3) and, with some skillful statistical manipulations, calculated the daily mortality rate to a bluebird nest for each day up to six days after an observer visited the nest (see Table 1). He accomplished this by placing a large number of nest cards in each of six different groups. Each group of totally different cards varied in the number of days between the initial nest visit and the return visit. One group of cards had the observers returning the next day to check the nest. For another group all the observers returned two days later, and so on, up to the group of cards in which the observers returned six days later. Bart then calculated the percentage of

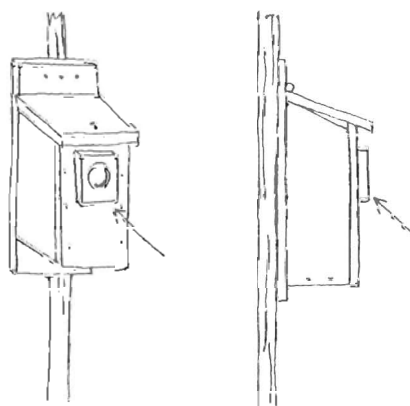


Figure 2. A raccoon guard will prevent a predator from reaching the contents of the box.

NORTH AMERICAN NEST-RECORD CARD PROGRAM Shaded Boxes not to be completed by observer

YEAR 1 9 8 0 5 9 14

Species: Eastern Bluebird

Observer (two initials, last name) In squares in space opposite → DD BLOONE

Locality (In relation to nearest town) 3 mi. N of Clear Spring

County Washington Elevation (in feet above sea level) 2939 3442 33

State or Province Md. Longitude 750 41077 57

HABITAT (circle where appropriate)
 1. Woods 2. Swamp 3. Marsh 4. Field 5. Grassland 6. Desert 7. Tundra 8. Suburban 9. Urban
 0. Other (specify)

01. Coniferous 02. Deciduous 03. Mixed 04. Orchard 05. Cultivated 06. Fallow 07. No Veget. 08. Hedgerow
 09. Shrub 10. Salt 11. Brackish 12. Fresh 13. Sandy Beach 14. Gravel Beach 15. Other (specify)

DOMINANT PLANT(S) IN HABITAT (list one or two) grass

NEST SITE (circle where appropriate)
 01 Bare ground 02 On ground in vegetation 03 Floating 04 Low vegetation 05 Shrub 06 Palm 07 Deciduous tree branch
 08 Deciduous tree cavity 09 Conifer branch 10 Conifer cavity 11 Nest box 12 Other structure 13 Cliff or bank
 14 Other (specify)

PRINCIPAL PLANT OR STRUCTURE SUPPORTING NEST fence post

Height of Eggs Above Ground or Water In Feet (feet and tenths if under five feet) 4 5 Feet 1 Tenths

If parasited by Cowbird check here If name pair had other nestings this year, indicate which this is (1, 2, 3) 1

rev. 5-4-71 PLEASE COMPLETE BOTH SIDES OF THE CARD

No. Col. 1-12 (Col. 2-14, side 1)		If used for colonial nesting check here <input type="checkbox"/> and see instructions						COMMENTS		
DATE		Eggs	Young	Eggs	Build- ing	Adult On	Stage of building. If eggs warm, age of young, if banded, etc.			
Month	Day									
5	11	4								
5	15	5				✓				
5	27	5					2 days old			
6	5	-					looks like good fledge			

01 Unknown because not revisited 07 Nest deserted 12 Failure due to competition with other species
 02 Young seen leaving nest 08 Failure due to weather 13 Failure due to human activities
 03 Parent(s) excited near nest 09 Failure due to predation 14 Failure due to pesticides (give details separately)
 04 Parent(s) with young near nest 10 Failure due to invertebrate parasites 15 Other (describe above)
 05 Nest empty, intact 11 Failure due to cowbirds

Please complete both sides and return at end of season to your Regional Center or to Laboratory of Ornithology, Cornell University, Ithaca, New York 14850. We thank you for contributing your time and efforts to this program.

Figure 3. A nest card from the Cornell Nest Card Program. This particular card could be used for calculating the Daily Mortality Rate for the 4-day interval group in Table 1.

nests in each group that survived until the second visit. For example, if the percentage of surviving nests in the 3 day interval group were 80, and the survival rate in the 4 day interval group were 72%, and if there were 100 nests in each group, then 80 nests survived through day 3 but only 72 nests survived through day 4. Thus, the estimated survival rate for day 4 is 72/80 or 90%. Conversely, if 90% survive, then 10% fail—the Daily Mortality Rate. Table 1 shows that the Daily Mortality Rate was the highest the day following the visit. This was higher than the sum of *all* subsequent days and strongly indicates an effect of the visit. The American Robin (*Turdus*

migratorius) is also included in Table 1 which shows the effect of human visitation as dramatically as for the Eastern Bluebird (*Sialia sialis*).

This study is especially significant to bluebird trail operators because a predator, most likely a raccoon, will learn to follow the human trail with obvious consequences. Bart does offer some advice to prevent this from happening. When checking boxes, do not approach the box and return from it along the same path. This leaves a dead-end scent trail pointed directly at the box (see Figure 4a). Walk at an angle toward the nesting box, stop to examine its contents

Table 1. Influence on Total Nest Mortality Rate by Humans Visiting the Nest During Incubation Period*

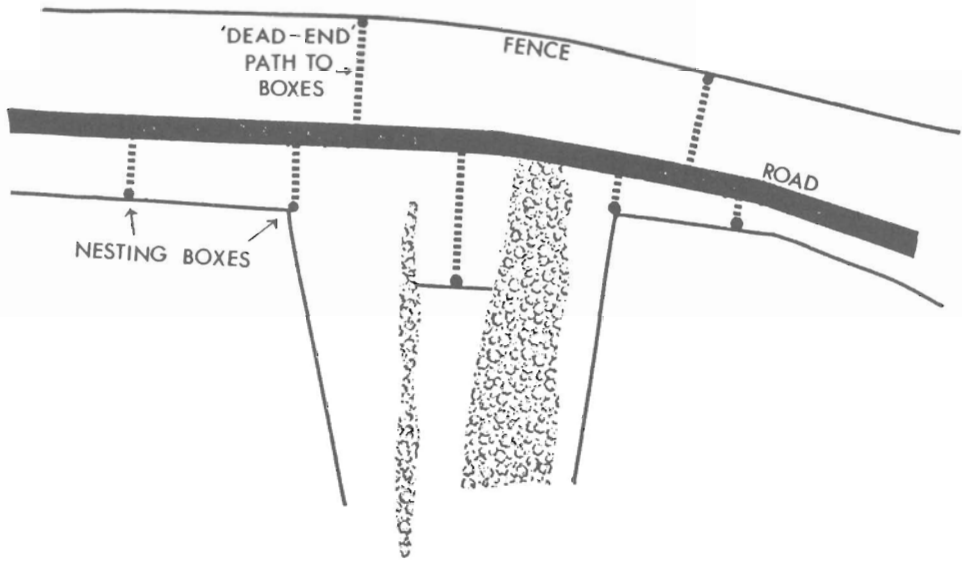
	American Robin	Eastern Bluebird
Time of visit	Incubation period	Incubation period
Number**	187-407	189-891
Daily Mortality Rate (DRM) 1 to 6 days after visit		
1 day	.098	.095
2 days	.011	.008
3 days	.007	.019
4 days	.005	.000***
5 days	.002	.016
6 days	.009	.001
DRM first day after visit	.10	.10
Average DRM during days 2 to 6	.01	.01

*Nest mortality is defined as loss of all eggs. The daily mortality rate was higher the day following a visit than on subsequent days indicating an effect of the visit.

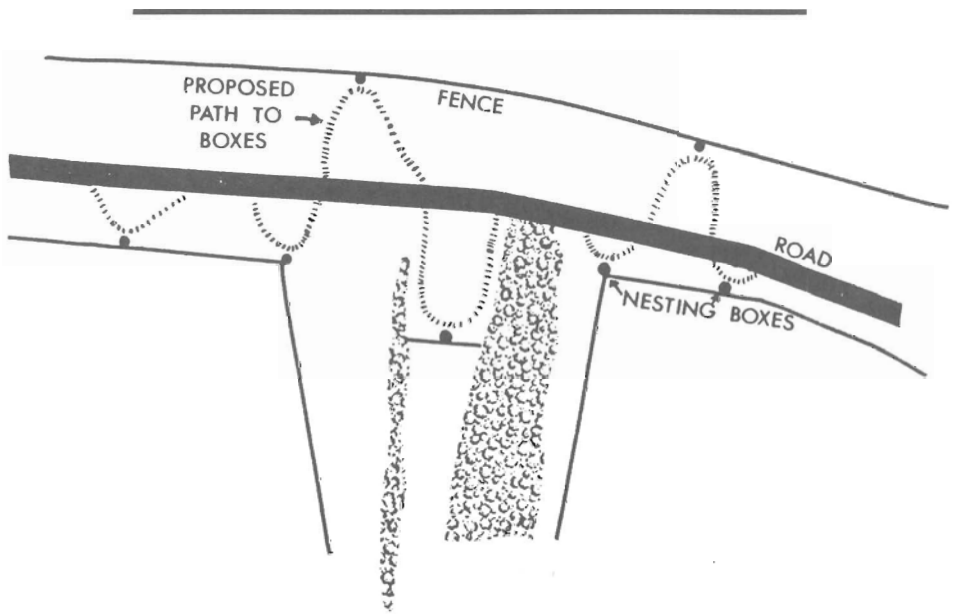
**A different sample was used to calculate each of the daily mortality rates. The numbers indicate the smallest and largest sample sizes used.

***.000 indicates that, due to sampling error, the calculated DRM was negative.

Table 1. Adapted from the original by Bart, Jonathan. 1977. Impact of human visitations on avian nesting success. *The Living Bird*. Cornell University, Ithaca, N.Y., 16:190.



4a. Diagram which depicts a bluebird who walks to and from each bluebird box along the same path. This leaves a dead-end scent trail and is not a desirable way to check a bluebird trail.



Diagrams by D. Daniel Boone

4b. Diagram which depicts the bluebird who walks at an angle toward a nesting box, checks it, and continues on, veering away from the box. This is the preferable method to check a bluebird trail.

(try not to move the feet, if possible, as this leaves heavy scent around the nest), and, after it has been checked, continue walking, veering away from the nest so the trail does not end at the nest and comes no closer to the box than necessary (see Figure 4b).

I think another wise practice bluebirders should use concerns disposing of the old nest, especially if young were present in the nest. Instead of tossing a used nest out near the box, carry a bag when making the rounds and put in it the nests you remove. Bluebirders know that one of the grimmest tasks they perform is removing fledged nests heavily scented with fecal matter. If this nest is dropped near the box it could act as a signal beacon—broadcasting to predators that food may be near. Attracting a predator into the vicinity greatly increases the likelihood of its discovering the box. It may then return one

night to terrorize the sitting female.

Certainly, if human-induced predation was too serious a problem along a bluebird trail, bluebirders would not exist. There are too many influences that complicate the predator-human-bluebird relationship to understand fully how it works. Variables like the height of the grass around the nesting box, whether the box is checked in the morning or evening, and how close the box is to a wooded stream or rock outcropping, probably affect the chance and the extent of predation as much as anything else. However, bluebird trail managers should keep these few practices in mind when checking their boxes. By being conscious of his actions around a nest, the human visitor may help reduce the incidence of predation. ■

4011 Woodhaven Lane
Bowie, MD 20715



REDUCING SWALLOW-BLUEBIRD COMPETITION

Allen A. Prigge

Ursurpation of nestboxes by Tree Swallows (*Iridoprocne bicolor*) is a serious problem on bluebird trails in most northern and some western states. In the West we must contend with the Violet-green Swallow (*Tachycineta thalassina*) as well.

Since swallows and bluebirds are both territorial, it would seem that interspecific competition could be reduced by pairing nestboxes. To test this idea during the 1980 breeding season, I set up six pairs of nestboxes and one cluster of four nestboxes. I also continued monitoring activity at a cluster of boxes that had been in place for several years. Two of the latter three nestboxes were set out by the property owner.

The results of such a small sample are not conclusive. However, others are also experimenting with this technique, and I believe a resume of my 1980 results might be of interest.

Pair 1 (Space between boxes—69')

Box 101—

A pair of Western Bluebirds (*Sialia mexicana*) built a nest and stayed around most of the summer, but no eggs were laid.

Box 118—

A pair of House Wrens (*Troglodytes aedon*) nested.

Pair 2 (Space between boxes—22')

Box 7—

No nesting activity

Box 164—

Tree Swallows nested unsuccessfully.

Pair 3 (Space between boxes—60')

Box 17—

A pair of Tree Swallows nested. Five nestlings believed fledged.

Box 59—

Two nesting attempts by Tree Swallows: the first possibly successful; the second successful. Nesting activity in Box 17 partially overlapped the first nesting in Box 59.

Pair 4 (Space between boxes—17')

Box 182—

Two successful Tree Swallow nestings.

Box 285—

Successful Violet-green Swallow nesting. This nesting overlapped the two Tree Swallow nestings in Box 182.

Pair 5 (Space between boxes—17')

Box 204—

Western Bluebirds attempted to nest (five eggs laid) but abandoned.

Box 211—

Tree Swallow pair built nest, but no eggs laid. On one occasion the male bluebird was seen entering both boxes. A Tree Swallow was also observed diving at the male bluebird as it sat on Box 204.

Cluster of four boxes

Box 166 to Box 292—117'

Box 292 to Box 293—9'

Box 293 to Box 294—5'

Box 166—

Western Bluebirds built nest, but Tree Swallows took possession before any eggs were laid.

Box 292—

Western Bluebirds made two nesting attempts. One nestling was fledged in the first attempt; six eggs were laid in the second attempt, but bluebirds abandoned box.

Box 293—

Swallows (species unknown) built nest, but no eggs were laid.

Box 294—Western Bluebirds started nest but abandoned.

All bluebird nesting activity in this cluster of nestboxes was probably carried out by one pair.

Cluster of three boxes

Box 131 to Box A—45'

Box A to Box B—31'

Box 131—

Two successful nestings of Western Bluebirds.

Box A—

Successful Violet-green Swallow nesting.

Box B—

Successful White-breasted Nuthatch (*Sitta carolinensis*) nesting.

As previously noted, conclusions cannot be drawn from such a small scale trail. However, the results were encouraging enough to stimulate additional and expanded experimentation. It should also be noted that in 1980 we had the most disastrous nesting season in the seven year history of our

bluebird trail. In a better year some of the nestings that failed would very likely have been successful.

The fact that Tree Swallows and Violet-green Swallows nested amicably only 35 feet apart should not be overlooked. I had hoped that this would not happen because of the similarity of habits of these two species. The significance of this suggested nesting compatibility is obvious. In the West it is possible that many of our paired nestboxes may house a Tree and Violet-green Swallow combination instead of the hoped for bluebird-swallow association.

I plan to continue experimenting with paired nestboxes in 1981. Hubert Prescott here in Oregon and NABS' President George Grant in New York are also working on this problem. ■

283 E. 38th Avenue
Eugene, OR 97405

First NABS Regional Meeting

The North American Bluebird Society, spear-headed by Mr. Lorne Scott and Mrs. John (Norah) Lane, will host the Northern Great Plains Regional meeting June 25-28, 1981, at Brandon University, Brandon, Manitoba, Canada. The conference, the first of its kind in Canada, is expected to draw naturalists from local, national, and international levels.

The three day conference will feature field trips to observe Mountain and Eastern Bluebirds nesting in the Spruce Woods-Carberry Sand Hills areas, home of the world-famed naturalist Ernest Thompson Seton for the period 1882-1892. In the Brandon area, conference participants will have the opportunity to observe the Baird's Sparrow, Chestnut-collared Longspur, and Sprague's Pipit as well as other species.

Although plans are still in the early stages, organizers are preparing a full day of presentations on the three bluebird species and other nature topics. The attendance of three of NABS' officers has been confirmed: Dr. Lawrence Zeleny, founder and author of *The Bluebird*; Mary Janetatos, Executive Director; and Delos C. Dupree, Treasurer.

Registration will begin the evening of June 25th at Brandon University. The conference will include time for socializing as well as for viewing the exhibit Nature Art of the Canadian Prairie and displays of nesting boxes.

Inquiries can be directed to Mrs. John Lane, NABS Canadian Director, 107 Lorne Avenue, Brandon, Manitoba, Canada R7A 0W2.

Note on Use of Multiflora Rose Hips by Bluebirds

Some time ago there was a letter in *Sialia* (2:121) to the effect that Multiflora Rose is considered by many farmers to be a pest plant on land that is not cultivated annually. The plant certainly is a problem when we attempt to get rid of it, but the fact is that Multiflora Rose is one of our most valuable shrubs for wildlife because of its dense growth and plentiful supply of long-lasting hips.

The winter of 1969-70 was one of the most severe that I can remember. We had freezing rain three or four days in a row; then it turned cold and snowed on top of the freezing rain. This happened three times that winter, yet the wintering bluebirds that roosted in my yard at night did not seem to be troubled by the ice, cold, and snow.

During that winter of 1969-70 I had as many as 13 bluebirds staying the night during the very cold weather of December, January, and February. When I took down the roost house on 1 March, I found the floor of the box covered with many small seeds from the bluebird droppings. Naturally, I wondered what wild fruit they came from. I knew how interested Larry Zeleny was in finding a winter food that bluebirds would eat and starlings would shun, so I wrapped a small sample of the seed and sent them to him.

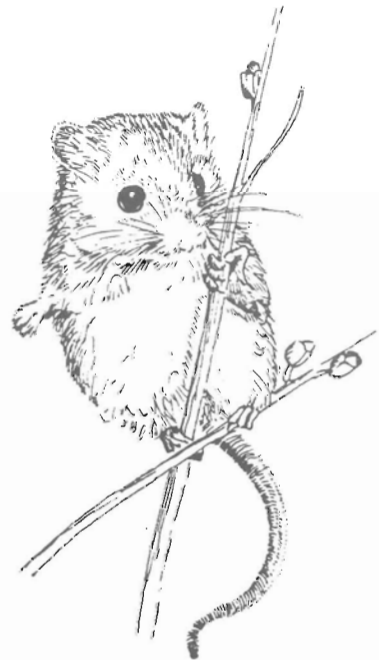
His letter to me a short time later said that he had sent a sample to the seed laboratory at the University of Maryland. The laboratory had notified him that the seeds were those of the Multiflora Rose (*Rosa multiflora*). Dr. Zeleny was very interested in finding out if starlings ate the hips as American Holly (*Ilex opaca*) was the only widespread winter food resource that bluebirds readily consumed and starlings seldom ate. He went on to say that the berries of the Flowering Dogwood (*Cornus florida*) were once an excellent source of winter food for bluebirds in Maryland, but now great hordes of starlings cleaned out the

dogwood berries by the first of November.

More recently (April 1980) I noticed that there were still hips on most of the Multiflora Roses, but the remaining hips were all on the inside of the bushes. The starlings evidently *did* feed on the hips, but only on the outer ones being unable to obtain those in the interior. The hips located inside the dense thorny tangles may be an important source of winter food for bluebirds and other small native birds. I do know that the Multiflora Rose was the main source of food for the wintering bluebirds in my area of central Ohio. ■

Joe Huber

1720 Evergreen Court
Heath, OH 43055



1980 Bluebird Nest Box Report

Ben Pinkowski, Ray Adams, and Paul Jung

A total of 292 persons responded to the 1980 Bluebird Nest Box Report forms sent out by NABS at the close of the season. Predictably, more respondents were from eastern North America than from the West or Midwest (Table 1), and more reports came from Maryland (45; 15.4%) than any other state or province. Among each of the three geographic regions, the greatest numbers of boxes available were recorded in North Carolina (1,953), Ohio (695), and Montana (3,200).

The average number of available boxes per respondent was much greater in the West (157.8) than in the Midwest (25.0) or East (34.7), indicating that fewer persons were maintaining longer nest box trails in the West than in other regions. Data on nest boxes in the West, however, were less complete than for other regions, apparently because of infrequent checks of boxes in remote areas. Some reporters noted that high gasoline prices made regular monitoring of lengthy trails impossible.

Most available boxes were of the closed top, 4" x 4" inside floor style (29.1%) or the closed top, 5" x 5" inside floor style (64.8%). Interestingly, these two styles were nearly equally represented in the East and Midwest, but 96.4% of the boxes available in the West were the 5" x 5" style.

Comparative figures for nesting success were obtained from the reporting forms by calculating the percentage of eggs that resulted in fledged young. This percentage was higher in the East (85.1%) and Midwest (73.2%) than in the West (39.8%), mainly because of a large number of nestlings in the West that died of starvation as a result of the Mount St. Helens' eruption. According to one reporter, 660 of 848 (77.8%) nestling Mountain and Western Bluebirds perished from starvation as a result of ash spread by the eruption along nest box trails in Montana.

Only 23 (7.9%) of the respondents reported on boxes used by Mountain or Western Bluebirds, making it difficult to compare success rates for the three species. Three of the respondents did not break down their data by species. Nevertheless, it was apparent that success was especially poor for Western Bluebirds (35.0% of the eggs resulted in fledged young) but much higher for Mountain Bluebirds (78.4%). Reasons cited for the poor success of Western Bluebirds included competition with swallows, cool and rainy weather, and mortality from intestinal parasites.

Eastern Bluebird nestling losses in the East were attributed to weather conditions (22.2%), raccoon predation (15.6%), and snake predation

TABLE 1
Bluebird Nest Box Usage Data According to Geographic Region

	East	Midwest	West	Total
Number of respondents	164	94	34	292
Number of boxes available	5,698	2,351	5,366	13,415
Number of boxes used by bluebirds	1,887	762	382	3,031
Number of bluebird eggs laid	9,818	2,826	1,976	14,620
Number of bluebirds hatched	9,086	2,250	1,656	12,992
Number of bluebirds fledged	8,355	2,068	787	11,210

TABLE 2
Other Species Using Bluebird Nest Boxes According to Geographic Region

	East	Midwest	West	Total
Tree Swallow	540	290	207	1,037
House Wren	423	267	43	733
House Sparrow	382	266	3	651

(12.2%); other factors appeared less important. By comparison, the major causes of egg losses in the East were snake predation (13.7%), raccoon predation (11.2%), and wren predation (9.8%). Although the loss of eggs or young to snake predation is usually a difficult assessment, it is apparent that many observers feel that snakes are a serious problem along their nest box lines. House Sparrow predation was blamed for the loss of 7.4% of all nestlings lost and 8.8% of all eggs lost in the East. It is often fairly easy to assess losses attributable to House Sparrows (adults or nestlings "scalped"), raccoons (nest usually disarranged and box badly scratched, with feathers scattered about if the adults or young were eaten), and House Wrens (eggs punctured and often removed from the box).

Weather appeared more of a limiting factor in Eastern Bluebird success in the Midwest than in the East. Observers in the Midwest reported that weather caused the loss of 27.6% of the eggs lost and 25.8% of the nestlings lost. Raccoons (11.9%), sparrows (11.1%), and wrens (10.4%) were

causes of nearly equal numbers of egg losses in the Midwest, whereas snake predation (13.2%), raccoon predation (11.0%), and sparrow predation (8.2%) were important causes of nestling losses.

Data on other species using nest boxes (Table 2) indicated that Tree Swallows were the most frequent competitors in both the East and Midwest, although usage frequencies by this species differed little from corresponding figures for House Sparrows and House Wrens. In the West, both Violet-green Swallows (13 usages reported) and Tree Swallows (Table 2) were the principal competitors for nest boxes, though respondents often failed to note which swallow species was using their boxes. House Sparrows did not appear to be a major competitor throughout much of the West, where most nest boxes were apparently located in isolated or rural areas away from the competitive influences of this species. ■

P.O. Box 308, New Town, ND 58763 (Pinskowski); 7000 N. Westnedge, Kalamazoo, MI 49007 (Adams); 12606 Memory Lane, Bowie, MD 20715 (Jung).

APPENDIX

Geographic Regions According to States and Provinces

1. West:

Washington, Oregon, California, Idaho, Nevada, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico, North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Hawaii; Alaska, Manitoba, Saskatchewan, Alberta, British Columbia

2. Midwest:

Minnesota, Iowa, Missouri, Arkansas, Louisiana, Mississippi, Wisconsin, Illinois, Indiana, Michigan, Ohio, Kentucky, Tennessee, Alabama, Florida, Georgia, West Virginia, Ontario

3. East:

Maine, Vermont, New Hampshire, Massachusetts, Connecticut, New York, New Jersey, Rhode Island, Pennsylvania, Virginia, D.C., Maryland, North Carolina, South Carolina, Quebec, New Brunswick, Nova Scotia

QUESTION CORNER

Lawrence Zeleny



How do you distinguish between the nest of a bluebird and that of a House Sparrow?

Gene Morgan
Hurst, Texas

Bluebird nests are usually made almost entirely of dry grass or dry pine needles. House Sparrow nests are made of a wide variety of plant material plus feathers and miscellaneous trash such as paper, plastic, bits of cloth, and even cigarette butts.

House Sparrow nests are generally much deeper than bluebird nests and are often domed over at the top.

When do you put up bluebird nesting boxes?

F.M. Patterson
West Monroe, Louisiana

In the southern states best results are usually obtained by having the nesting boxes in place during the winter, since the bluebirds will start their search for nesting sites in February.

Since bluebirds usually raise two broods during the season, however, later placement of the boxes may still result in success.

In looking over your nest box plans I have a question about the design. Is not the distance from the entrance to the bottom of the box much too great for young birds when they are trying to leave the nest?

George L. Egbert
Gaylord, Michigan

Healthy young bluebirds when they are of the proper age to leave the nest (15 to 20 days) have no difficulty whatever in getting out of the nesting box you mention.

There is some evidence that Tree Swallows sometimes become trapped in various types of nesting boxes. This matter is currently being studied.

I noticed that the *Parade* article was mainly about Eastern Bluebirds. Are the box plans the right size for western species also?

Ingrid Wendt Salisbury
Eugene, Oregon

The same size nesting box is suitable for all three bluebird species. Some bluebirders, however, prefer a slightly larger floor size, up to 5" x 5" for the Western and Mountain Bluebirds, because these species have slightly larger broods on the average than do Eastern Bluebirds.

PEOPLE AND THE BLUEBIRD TRAIL

Robert M. Schutsky

This paper was originally presented November 8, 1980, at the Third Annual Meeting of the North American Bluebird Society.

The Muddy Run Bluebird Nesting Trail is located at Philadelphia Electric Company's Muddy Run Park in Holtwood, southern Lancaster County, Pennsylvania. It was initiated in 1977 with the principal objective of aiding the Eastern Bluebird (*Sialia sialis*) in its struggle for survival. In this respect the project has been successful. More than 200 young bluebirds have fledged from the trail during the past four years. Local residents are reporting nesting bluebirds where they have been long absent or never before seen. Numbers of bluebirds in the local Christmas bird count and summer bird count have risen, even with the decimating effects recent severe winters have had on many bluebird populations (Table 1).

Besides the principal objective of restoring the local bluebird population, many other benefits have resulted from the establishment of the Muddy Run Bluebird Nesting Trail. It is used as the central theme of interpretive nature walks for park campers and visitors, school groups, bird clubs, Audubon societies, and other interested organizations. Workshops are conducted to help people begin their own successful bluebird restoration projects. Newspaper articles and slide programs inform the public about the trail. Nature photographers visit Muddy Run to capture the trail's inhabitants on film. The bluebird is, of course, the main attraction.

All of the activities mentioned above contain two important elements: bluebirds and people. I have successfully included people in the nesting trail with little, if any, detrimental effect to the nesting birds. Whether it is one person monitoring the trail, two or three people preparing a news story, or fifty people on a nature walk, things can run smoothly if properly planned. Even thousands of people need not be a problem if proper steps are taken.

Monitoring the Trail

In his book *The Bluebird*, Lawrence Zeleny explains the reasons for monitoring a nesting trail on a regular basis. These include nesting box repair, flooded nest replacement, predator control, and data gathering to name just a few. Some individuals discourage regular visits suggesting it is better to "let nature take its course." Unfortunately, man has interfered so greatly in the natural history of the bluebird (as well as many other species) that this is no longer a viable alternative or reasonable argument. Man, to a great extent, is responsible for the drastic decline in the Eastern Bluebird population during the past 50 years. Thus, we must intervene in a positive way to reverse this trend and save the bluebird from possible extinction.

The Muddy Run Trail is monitored weekly from April through August. During these visits I make a variety of observations including the species using the box, stage of nest construction, number of eggs

or young, and presence or absence of the adult birds. Young are banded 10 to 12 days after hatching, and any signs of predation or pests are noted and appropriate action taken. I do not visit the nests during particularly cold, rainy or windy weather, and I spend a minimum amount of time at each box to avoid undue disturbance. I have noted no detrimental effects from careful, regular monitoring of the nesting trail. In fact, the benefits attained through data collection, banding, and saving eggs and young from predation and environmental factors tip the scale heavily in favor of these regular checks. Some may argue that predators follow the trail created by walking from box to box. However, diversionary techniques such as scent masking, walking indirectly to each box, and overwalking the boxes can be used to minimize this possibility.

Self-guided Small Groups

Small groups of interested individuals are encouraged to use one segment of the trail. This segment contains nine boxes arranged in a roughly circular pattern and is well marked on the road and trail map available at the park office. When people obtain a trail map they are also given a hand-out which contains a brief history of the trail, when and where to look for bluebirds, and guidelines for using the trail. These guidelines are designed to insure the health, safety, and success of the nesting bluebirds:

1. THE BOXES SHOULD NOT BE OPENED. Disturbing the birds at certain phases of the nesting cycle greatly decreases their chance of nesting success.

Table 1. Expansion of the Eastern Bluebird Population in Southern Lancaster County since 1976.

Year	Muddy Run ¹ Pairs	Young Fledged	Holtwood ² Young Fledged	CBC ³	SBC ⁴
1976	0	0	0	26	No data
1977	2	12	0	29	12
1978	3	21	4	20	19
1979	11	77	32	48	24
1980	15	91	89	122	42

¹Muddy Run Bluebird Nesting Trail, in Philadelphia Electric Company's Muddy Run Park in Holtwood (southern Lancaster County, PA), was started in 1977.

²Holtwood Trail is on Pennsylvania Power and Light property, adjacent to Philadelphia Electric Company's Muddy Run Project area.

³Christmas Bird Count (CBC) by National Audubon Society in southern Lancaster County includes the Muddy Run area.

⁴Summer Bird Count (SBC) is conducted during early June in southern Lancaster County and follows the same rules as the Audubon CBC.

2. The activity of the nesting birds can be easily observed FROM A DISTANCE OF 50 FEET. Choose an inconspicuous position near a tree or bush. Binoculars or a spotting scope are helpful.
3. AVOID INCLEMENT WEATHER, especially RAIN, WIND, OR COLD. Bluebirds are best observed on fair, mild, calm days.
4. SMALL GROUPS will more successfully observe bluebirds than large groups. Restrict group size to SIX people.
5. PHOTOGRAPHY IS ENCOURAGED. A blind is available.

People may inquire at the park office if they have questions or would like additional information about the nesting trail. They are referred also to the nature walk schedule if they are interested in guided interpretive programs about the Eastern Bluebird.

Guided Interpretive Walks

Guided interpretive walks, or nature walks as they are more commonly called, are conducted at Muddy Run Park every Saturday from April through October. A variety of themes is used for these walks—a favorite is the Bluebird Nesting Trail. An average Saturday program lasts for two hours and attracts as many as 40 participants. The following method is used to handle groups of this size and still give each person a meaningful experience.

Just prior to the walk, I make a quick tour of the trail by myself. I then know what to expect at each box, such as a nest under construction or four young ready to

band. Before approaching the first box I give the group an introduction to the Eastern Bluebird: its appearance, reasons for its population decline, and the way trails can help to restore its numbers. I then explain what is happening in the first box we will view. I approach the box, flush the female if necessary, and allow each person to view the contents. We move a safe distance from the box and stop. This allows time for questions concerning what was just observed, stories of similar experiences from the participants, and the possibility of seeing the adult birds return to resume their nesting activity. We then proceed to the next box and start again.

If a nest is not at a critical stage of development, I often enlist the help of several participants (usually youngsters) to check the box for me and report their findings to the group. The group then views the contents as before. This adds an element of surprise to the walk and reinforces the idea that, although the boxes are checked regularly, I can never be certain what to expect from one day to the next.

People are encouraged to bring binoculars and camera. I bring extra binoculars and a 20-45 power spotting scope for viewing any particularly obliging birds that remain still. If weather permits and if the group is not too large, I will band any young of appropriate age. If banding is not feasible I explain the concept of banding during the course of the walk. At the conclusion each participant receives a NABS brochure, notice of future bluebird workshops and slide programs, and an invitation to return to see the bluebirds again. Many people accept this offer and return later in the season

to see how the birds are progressing.

Large Numbers of People

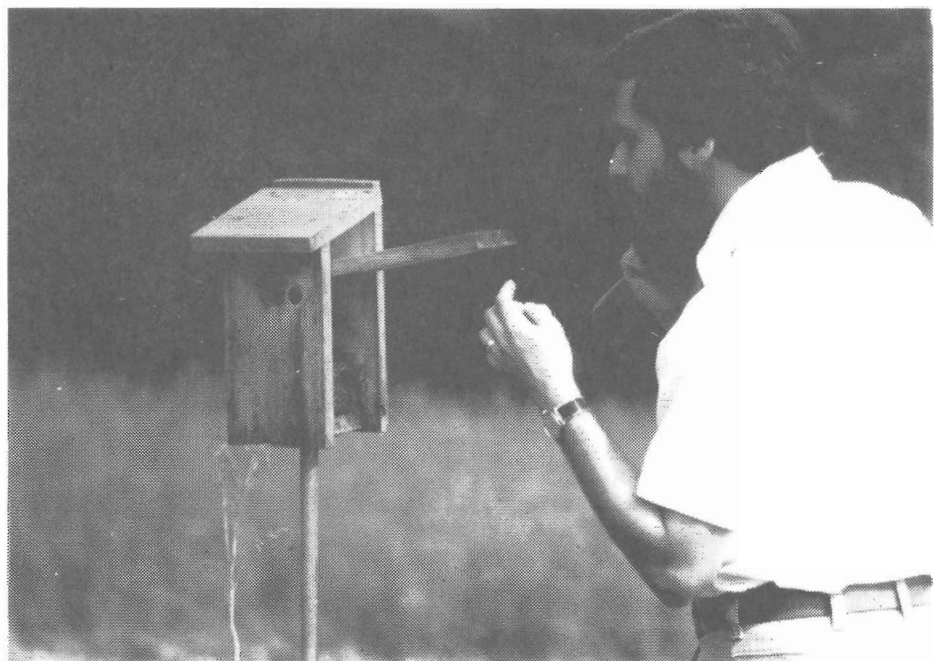
Muddy Run Park was opened to the public in 1969. Since that time it has attracted approximately 250,000 people annually for a variety of recreational and educational activities. This large number of visitors has had little impact on bluebird nesting activity. Boxes are not placed in the heavy visitor-use areas. I attribute judicious box placement and our public education programs to the almost complete lack of vandalism and human interference along the nesting trail.

An annual assembly that brings a particularly large number of visitors to the Park is an event called Creation. This is a three day religious gathering described by

its sponsors (Come Alive Ministries, Inc., Medford, NJ) as "an outdoor Christian event featuring camping, teaching, music and fellowship."

Creation '79 brought 12,000 people to the Park; Creation '80 attracted nearly 20,000. With the people come large numbers of cars, trailers, tents, associated traffic and congestion, and the physical impact of the sheer number of people in attendance. Since the event occurs during the bluebird nesting season, some precautions are needed to protect the nesting birds.

In southeastern Pennsylvania bluebirds begin nesting in April and usually finish their first broods by the end of May or early June. Creation is scheduled during the latter part of June. Many of the open fields seldom used throughout most of the year become parking, camping and other



Photograph by Charles Anjard

Schutsky monitoring one of the boxes on the Muddy Run Trail.

centers of activity during Creation. There are four techniques which I have used successfully prior to and during this event: plugging entrance holes, moving boxes, roping off active boxes, and foster parenting. Each of these techniques is described below.

If a first brood is completed just prior to Creation, I normally plug the entrance hole and leave the box in place. As soon as the people leave, I reopen the box. I have had good luck with birds re-occupying the box at this time, with the interim interference by the crowds seemingly not affecting their breeding activity.

If the first brood fledges before the first week in June, I remove the box and place it in a new location. This forces the adults to seek out a new territory for their second nesting. In several instances I have had pairs of bluebirds move into previously unused areas. Presumably these are birds which were displaced by the removal of the boxes. I expand the trail each year, so this is a good way to attract pioneer birds into new areas.

Occasionally my timing is a bit off or I will forget about a box in a critical area. At these times a bit of rope goes a long way. I have roped off boxes in both parking and camping areas. During the past two years five pairs of bluebirds have successfully continued their nesting activity with seemingly little or no adverse effects from all the activity surrounding them. Adult birds have even been seen sitting on car antennae and tent poles, using these newly found perches from which to hunt.

After reading Anne Sturm's article, "Trail Work with Incubators and Foster Parents" (*Sialia*

1:180), I decided to try foster parenting at two boxes. With advance planning and careful timing this can be a useful technique in a variety of situations, especially if abandoned eggs or nestlings are found. The most critical aspect of this technique is timing. Bluebird eggs or young must be fostered to a nest which is within one to two days of the same stage of development. House Sparrows (*Passer domesticus*) may also be used as foster parents. Timing is not so critical in this method because all of the House Sparrow eggs or young are removed and replaced with the bluebird's. This is allowable because House Sparrows are totally unprotected by law.

Just prior to Creation '80 I made my first attempts at foster parenting: one succeeded, the other did not. Four ten-day old nestling bluebirds were placed in a box with two nestling bluebirds of approximately the same age. The foster parents raised all six nestlings to fledging. The foster parents had the added stress of having their box located in a temporary parking area. A circle 75 feet in diameter was roped off and feeding activity was continued with very little interference from all the cars, people and commotion.

The other case involved a newly completed clutch of five bluebird eggs. The only potential foster parent was a House Sparrow which had not yet completed her clutch. I removed the three House Sparrow eggs, replaced them with five bluebird eggs, and hoped for the best. I did not expect this transfer to succeed because the female House Sparrow was not yet incubating her clutch. To compound the problem, there was

(continued on page 80)

RELOCATION OF BLUEBIRD NESTBOX UNDER EMERGENCY CONDITIONS

Bruce A. Eltzroth

Bruce Eltzroth placed a nesting box at Watts Bar Dam, Spring City, Tennessee, in 1979 where it was used successfully by Eastern Bluebirds. The first nesting attempt in 1980 was unsuccessful due to destruction of the young in the nest by House Sparrows. The sparrows were eliminated and the bluebirds began a second nest three weeks later. This nesting also seemed destined to fail because of construction timetables, but Westinghouse engineer, John Murphy, resorted to extraordinary measures. The box was moved, not once—but twice!

On 6 June 1980, bluebird box #7842 was moved to allow construction workers to dismantle and then reconstruct an electrical substation enclosure on which the box was attached. The box was bolted to a metal pole which was nailed to the enclosure. The box was removed from the metal pole prior to moving the pole from the enclosure.

During the process of the move, the box was taken indoors to allow the eggs to be counted. The box was "bottom opening"; therefore, it was necessary to insert an angled mirror through the entrance hole to make the count. The nest contained five Eastern Bluebird (*Sialia sialis*) eggs.

The box was then moved approximately 75 feet northeast of its original location with the opening approximately 10 feet above the ground facing south. Originally it had faced east (see diagram). The metal pole was nailed to a wooden post and the box attached to the pole using the original nut and bolt.

After the move, the adult female returned to the old location and "hopped" into the air at the precise elevation of the original entrance. She hovered at that spot for several seconds looking for her nest. After the

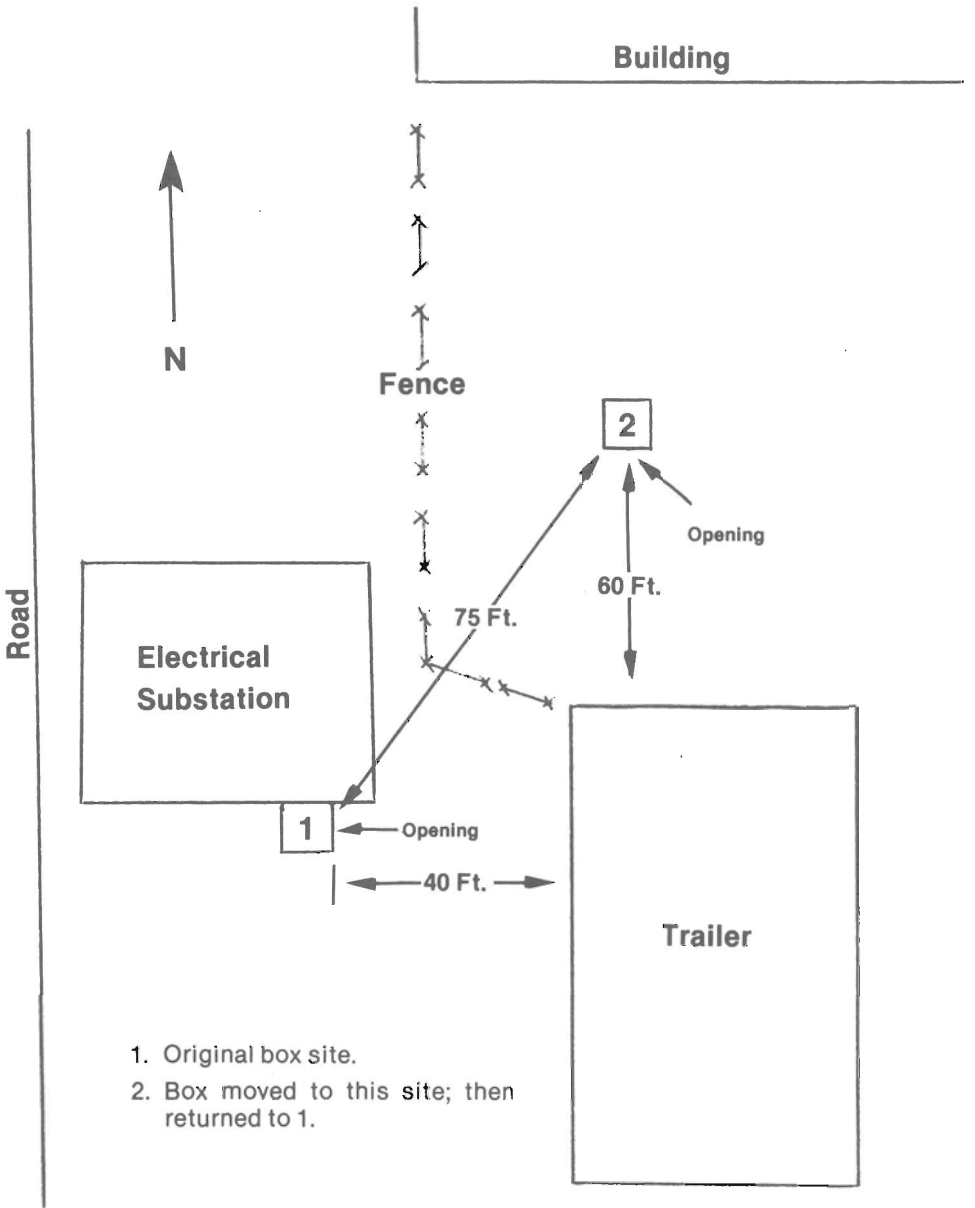
second or third try to locate the nest she seemed to realize that it was no longer at that location. She then calmly proceeded to the tops of the surrounding structures (light pole, roof top, fence post, etc.) where she surveyed the area. This continued for approximately two to three minutes. She seemed to recognize the box immediately, but was apprehensive about approaching too closely. For approximately 15 minutes she would fly past, hover in front of, or fly up and touch it, but would not go into the box. When she first landed on the box she would peer over the edges, or hop into the air as if it were hot to the touch. When she finally approached the hole, she would lean away, look around and quickly take a peek inside, then jerk her head away again. This "hide 'n' seek" game continued for about 10 minutes, until she finally got up enough nerve to go inside. Overall, it took about 30 minutes from the time the box was moved until she went inside the box.

Ten days later, after reconstruction of the electrical substation enclosure, the box was moved back to the original location. It was moved and installed in the same manner as originally described.

By this time one of the eggs had hatched. After the nest was returned to its original location, the adult female was inside the box within 30 seconds with only one slight hesitation at the entrance.

All five young were successfully fledged during the Fourth-of-July weekend. This was not observed directly, but on Monday, 7 July 1980, the nest appeared to be empty. On 14 July 1980, the box was taken down, inspected, cleaned, and re-installed. ■

509 Calvin Street
Kingston, TN 37763



Distances are approximate.

Diagram by Bruce A. Eltzroth

Figure 1. Original and temporary location of Eastern Bluebird nesting box #7842, Watts Bar Dam, Spring City, Tennessee.

BLUEBIRDS OBSERVED

Betty Haines

I live three miles north of the 1A highway on the Bearspaw Road outside Calgary. My husband had placed bird boxes around our house, hoping to attract swallows which would help to control mosquitoes. On April 21st the Tree Swallows had returned and were inspecting the boxes. I noticed a flash of more brilliant blue among them, and closer observation proved it to be a male Mountain Bluebird, the first we had ever seen around our house. He was to be seen occasionally for the next few days, and on May 10th we caught a glimpse of a female, who was harder for us to identify until she flew, and we saw her blue rump. The existing bird boxes were already occupied, so my husband built two more, which he placed on fence posts a few yards from our front window. The pair of bluebirds immediately made a careful inspection of the box nearest the house and accepted it. We were delighted. Nest building commenced at once; only grass was used.

We observed the following:

May 23 - 2 eggs

May 31 - 6 eggs, female incubating

June 9 - 3 eggs had hatched

June 28 - 3 well-developed nestlings, fluffy gray bodies with bright blue feathers on wings

June 29 - Nest empty; bluebirds still defending nest box and apparently feeding young in adjacent bushes.

The family remained around the nest box for a week, and then were

not seen again until July 11th, when they all returned and were eagerly observed for a whole morning. It was the first time that we had seen the fledged young, and we were interested to see that the young were self feeding and as gentle in temperament as their parents.

During the nest building there had been much activity involving many species of birds and some moments of great beauty. On one occasion it was wonderful to see a row of brightly colored birds all perched on the wire fence: two bluebirds, a pair of American Goldfinches, three Tree Swallows, and a robin. This group shared a large rain puddle for bathing, and no infighting seemed to occur. When the puddle dried up, my husband built a brick and rock bird bath. The bluebirds adopted it as their own before the cement was dry! We were surprised by their ready acceptance of us, even when it was necessary to modify the area of the nest box to render it more cat-and-magpie-proof.

We have not seen our bluebirds since the end of July. It was a most enjoyable interlude, and we hope that these exquisite birds will return next year. ■

RR#4
Calgary, Alberta
Canada T2M 4L4

Editor's Note: The foregoing (here used in slightly abbreviated form) was originally published in *PICA*, the magazine of the Calgary Field Naturalists' Society, 1:115-116. We thank them for reprint permission.

PLANTINGS FOR BLUEBIRDS AND OTHER WILDLIFE

Birds Like Bayberry

George N. Grant

I went looking for bluebirds when I was in Florida late last winter.

After some searching I found them feeding on one of their favorite winter foods: Bayberry, more commonly and correctly called Waxmyrtle in the South. Also feeding on the berries were several other species of birds including the Yellow-rumped Warbler. A former common name of the bird (Myrtle Warbler) reflects their fondness for the berry.

There are six species of *Myrica* on the East coast and one on the West coast. Generally confined to coastal areas, they do, at times, extend inland locally a considerable distance. In most parts of the country they can be planted as highly desirable ornamentals. While in milder climates they are evergreen, in more northern areas the leaves generally turn brown and are blown off by winter winds.

In colonial times the waxy coating of the great quantities of berries or nutlets was used to scent candles and soaps. Occasionally, it is still used for that purpose.

The berries are attractive to many species of birds. Most interesting is that the Tree Swallow consumes many berries although normally its diet is derived almost entirely from insects. Bayberry is not only an extremely valuable



source of *winter* food, but the berries are held well into the next spring and even summer. This characteristic is important to spring migrants who may find little else available.

Bayberry - Waxmyrtle (*Myrica* spp.)

Native—Northern Bayberry (*Myrica pensylvanica*) mostly coastal along Atlantic, south to N. Carolina, and scattered around the Great Lakes. Deciduous, 3-9 feet tall, upright, rounded, fairly dense shrub that tends to colonize from suckers.

Common Waxmyrtle—(*Myrica cerifera*). Coastal plain from New Jersey to Florida, west to Texas. Evergreen, 10-30 feet tall.

Pacific Waxmyrtle—(*Myrica californica*). Generally along the entire Pacific coast. Evergreen, 6-25 feet.

Flowers—Inconspicuous male and female flowers or catkins born on separate male and female plants from April to June depending on species.

Fruit—Aromatic 1/8" waxy berries born in clusters, pale gray when ripe, persisting more than a year. Pacific Waxmyrtle fall fruit is purplish.

Habitat—Grows on dry, sandy sites along the coast and inland.

Landscape Value—Excellent plant for massing and blending with evergreens. Use also in borders and as foundation plants. Berries and winter twigs (when deciduous) make the shrub quite attractive.

Culture—Thrives in poor, sterile, sandy soil in full sun to part shade. Withstands salt spray. Requires acid soil as chlorosis is a problem in high pH soils. Transplant balled and burlapped or as a container plant.

Undesirable Traits—Difficult to grow if soil conditions are not right, particularly in sod soil or with heavy weed competition.

Diseases and Insects—None serious.

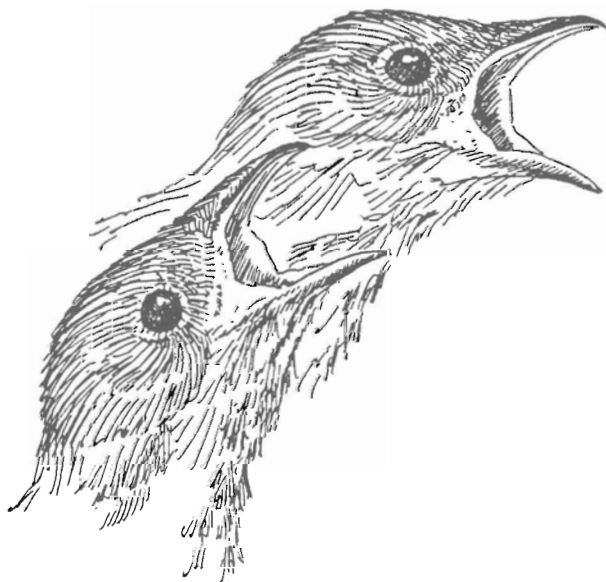
Propagation—From suckers or from seeds collected in fall; remove wax and stratify in moist peat for 60-90 days at 41°F.

Use by Wildlife—Bayberries are a preferred food of the Tree Swallow, Gray Catbird, BLUEBIRD, Red-Bellied Woodpecker, Brown Thrasher, European Starling, Eastern Meadowlark, White-eyed Vireo, Yellow-rumped Warbler, Wrenit, and nearly 70 other species of song and game birds which consume them to a lesser degree.

Cover and Nesting—Little used except by Red-winged Blackbird in coastal areas.

Special Uses—A pound of berries immersed in hot water yields about four ounces of wax for use in making bayberry scented candles or soap. ■

RD #3, Box 153B
Canastota, NY 13032



TUTTLE'S UNIVERSAL INTERPRETIVE BLUEBIRD NESTING BOX

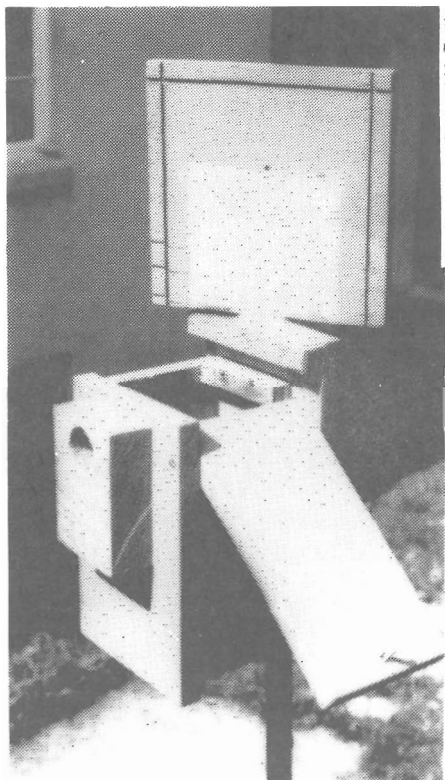
Richard M. Tuttle

The description of this nesting box sounds like a magic tonic from a traveling medicine show—a cure-all for bluebird trail ills, an elixir to maintain trail health. Lawrence Zeleny (1976) and George Grant (1980) have detailed the advantages and disadvantages of the top opening, side opening, and front opening nesting boxes. Each model poses a dilemma with advantages balanced against disadvantages. Trail monitors who band and photograph tenants seem to be the most difficult to satisfy. Most bird banders prefer open-top models until the box needs cleaning, then a front or side opening box suddenly becomes desirable.

Interpretive bluebird trail programs at Delaware State Park, Delaware, Ohio, have been described in previous *Sialia* articles (Tuttle, 1980). During the past four nesting seasons, naturalists have guided groups of interested park visitors on tours of a working bluebird trail. In some cases a hand-held mirror was used to show eggs or young to potential bluebirders. A mirror was satisfactory when held at a less than 45 degree angle with the nest top. Most of the nesting boxes were front opening. Hand-held mirrors worked well if the nest was low, but many House Wren nests were much too high to allow a mirror to be placed between the nest and the top of the box. Although there have been no problems in the past, older nestlings of all species could have fledged prematurely with the front opened to the daylight.

To satisfy the needs of most, hopefully *all* trail monitors and naturalists, I have incorporated several ideas to design a combination top opening and side opening nesting box. The top can be removed so that a hand-held mirror can be used for interpretive purposes to promote bluebird

conservation. The side can be opened for rotenone application and nest removal. This interpretive nesting box is cheap, simple, strong, and makes most efficient use of 1" x 12", no. 3 grade White Pine boards. Its floor measures 4 1/2" x 4 1/2" to satisfy those working with the larger clutches of Mountain and Western Bluebirds as well as Tree Swallows. Yes, it should indeed be a cure-all.



Photograph by Richard M. Tuttle

The interpretive bluebird nesting box incorporates the best features of many box designs. The dominant features of an opening top and side answer most needs of bluebird trail managers.

Materials and Cuts

Personal preferences for building materials vary. For workability and economy I prefer 1" x 12" White Pine sheeting, no. 3 grade which actually measures 3/4" x 11 1/4". Number 3 grade has solid knots whereas no. 5 has loose knots or even knotholes. The no. 1 and 2 grades are more expensive and are unnecessary.

Sheeting is shipped to the lumber yard in 16' lengths. Most hatchbacks and station wagons can transport 8' lengths from the lumber yard to the workshop. One 8' length can produce four interpretive boxes, excluding the predator guards and tops.

The tops are sawed from 5/8" or 3/4" A-C outdoor plywood. Painted plywood tops are virtually warp proof as well as water resistant. The interpretive box has a flat top to guarantee simplicity. Rain grooves must be sawed along three sides to prevent rain from entering ventilation gaps. Rain grooves are simply slots 1/16" to 1/8" deep which are sawed on the underside, 1/2" from each of the three edges. The back edge is sealed with a cleat and therefore does not need a rain groove.

Predator guards are sometimes made by sawing 3" wide slices from 2" x 4" studs. A 2" x 4" really measures 1 1/2" x 3 1/2", but 3 1/2" long predator guards are too short to provide

maximum support for the tail feathers of perching bluebirds. The best predator guards are made by ripping 2" x 10" boards (1 1/2" x 9 1/4") in half lengthwise to produce 1 1/2" x 4 9/16" boards. Three inch slices from 4 9/16" boards make excellent predator guards. Some bluebirders consider predator guards optional, especially if the mounts are predator proof, i.e., greased pipe. However, predator guards not only protect the nest from intruding paws, but starlings find it difficult to insert their beaks into the nesting chamber with 2 1/4" of wood holding their shoulders back. An added advantage is that the extra thickness of wood blocks sunlight and rain from entering the box should the roof overhang fail in this respect. To many, added strength and a reduced amount of warping are reasons enough to incorporate predator guards. Predator guards do not discourage tenants; in fact, many adult birds seem to enjoy sitting in the 2 1/4" tunnel during "guard duty."

Predator guards are attached to the front of the box with nails or screws that are 2-2 1/8" long. Glue is not recommended since entrance hole enlargement by woodpeckers and squirrels frequently makes replacements necessary. Nail or screw holes are predrilled in the predator guards to prevent splitting. To insure proper

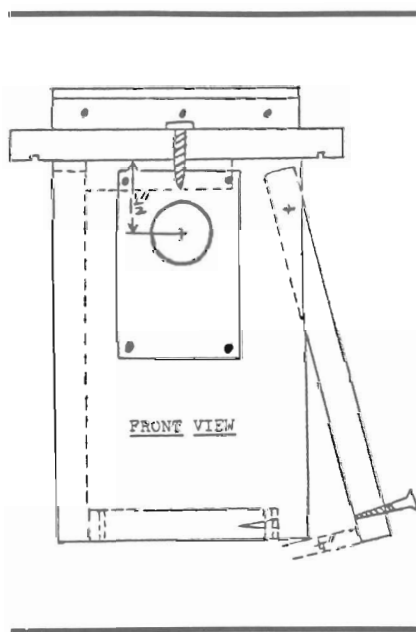
Table I

Part	Dimensions in Inches	Stock Material
Bottom	4 1/2 x 4 1/2	1 x 12 (3/4 x 11 1/4), White Pine, No. 3 sheeting is recommended.
Fixed Side	4 1/2 x 9	
Opening Side	4 1/2 x 9 1/4	
Front	6 x 9 1/4	All boards must be 3/4 inches thick.
Back	6 x 11	
Top	8 x 8	5/8 or 3/4 inch A-C outdoor plywood
Upper Cleat	3/4 x 6	Outdoor plywood or 1/2" quarter round.
Lower Cleat	3/4 x 3 1/2	
Predator Guard	3 x 4-9/16	2 x 10 (1 1/2" x 9 1/4")

hole alignment, drilling of the entrance hole takes place after the predator guard has been attached to the front.

A flat 1 1/2" woodboring bit is used for the initial entrance hole. A 1 9/16" hole saw is then used as a reamer to enlarge the hole to admit Great Crested Flycatchers if that species is desired (Zeleny, 1980). Caution: 1 5/8" holes admit starlings. Because 1 9/16" is an uncommon size for a hole saw, it may have to be ordered by a hardware store. To interested readers I can supply the addresses of two companies that manufacture that size saw.

Glue and tack several pieces of scrap wood (1/4" x 3/4" x 3") to the backside of the front to provide toe hold notches for the nestlings. A router equipped with a 1/4" bit also can make these notches. Another alternative for the experienced woodworker is to make blind cuts on the backside of the front using a table saw blade raised to project 1/8" above the table.



Assembly

Glue all permanent joints and use #6 galvanized box nails or twisted pallet nails.

Step 1. Use a square to scribe a reference line for the top edge of the bottom cleat. The line is 9 1/4" from the bottom of the back piece.

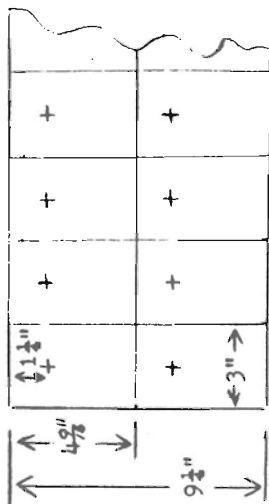
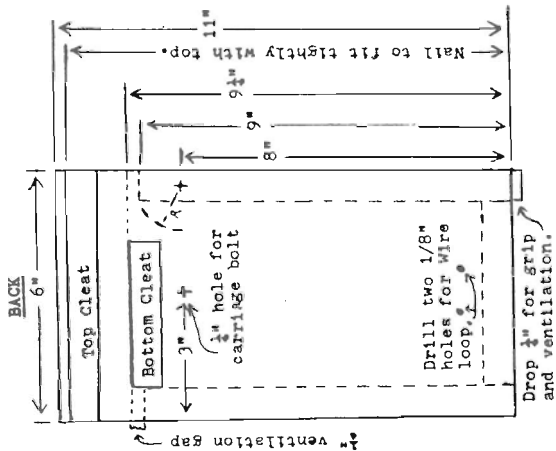
Step 2. Nail and glue the back to the fixed side. Make sure the bottom ends match.

Step 3. Nail and glue the bottom cleat to the back. Make sure the cleat is 1/4" above the side to create a ventilation gap. Also, make sure the cleat makes contact with the fixed side. If the cleat is too long, or if it is mislocated, the pivoting side will not open.

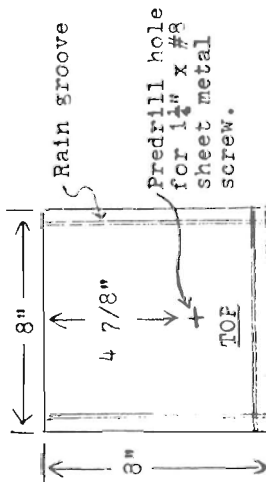
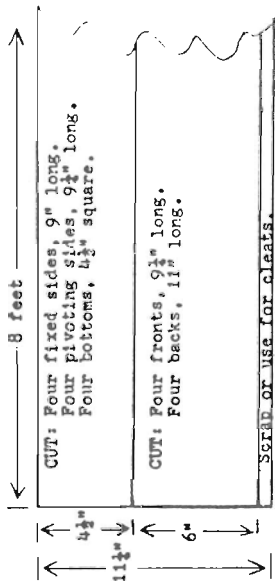
Step 4. Nail and glue the bottom. The bottom can be recessed 1/4" to eliminate the capillary attraction of water into the nest. For proper drainage, 1/4" drain holes can be drilled after the box is painted or the corners can be cut off before assembly.

Step 5. Some expert nature photographers remove the side of a box during photo sessions. To permit side removal, install the pivoting side using two 1 1/2" x #8 brass screws for "pivot nails," two flathead wood screws of that same size, or two #5 double-headed nails. Make sure the removable side protrudes 1/4" below the bottom to create a bottom hand grip with a ventilation gap at the top. Use a 1 1/2" x #8 flathead screw centered 5/8" from the side bottom as a door lock. Open and close the pivoting side to guarantee its flexibility. If the side does not open completely, check the bottom cleat for errors.

Step 6. Open the side. Place the top in position. Put glue on the back side of the top cleat and put it in place. Press the top cleat against the top piece while the nails are driven in. Serrated 1 1/4" nails work best. Turn and seat the 1 1/4" x #8 sheet metal screw until the top is tight. Reverse the screw and remove the top before the box is painted to prevent the paint from acting as glue.



Predator Guards are cut from 2 x 10 stock.



Step 7. Sand and paint the nesting box. Paint everything except the inside surfaces and the front surface of the predator guard. After the paint has dried, drill four 1/4" drain holes near the corners of the bottom (if corners were not removed in Step 4). In order to prepare the box for mounting, drill a 1/4" hole in the center of the back 8" from the bottom for a carriage bolt. Also drill two 1/8" holes near the bottom to accommodate a "coat hanger" wire loop. Steel wire which is more ductile than coat hangers can be purchased at the hardware store.

During installation, the tightened carriage bolt makes a crunching sound once the head seats into the wood. Use a pair of stout wire cutters to twist the wire loop until the box is pulled snugly against the mounting pipe. Apply black chassis grease to the mount to discourage climbing predators.

On brief visits during the nesting season, knowledgeable naturalists can remove the box top and use a hand-held mirror to share with others the natural wonders experienced regularly by bluebird trail monitors. The interpretive nesting box can help to recruit additional bluebirders so that there will be more streaks of blue painting tomorrow's sky. ■

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NABS Education Chairman
295 W. Central Avenue
Delaware, OH 45015



Photograph by Richard M. Tuttle

The side opening feature simplifies cleaning. Nests to be used for display in nature center showcases are easily extracted.

PERSISTENCE AND PATIENCE PAY OFF

Jerry and Madeline Newman

After six years of intermittent bluebirding with no success (the only nest with young was lost to a snake) persistence finally paid off during the 1980 nesting season. I had retired a few years earlier and decided that in 1980 I would go all out in my quest for nesting bluebirds. I had become rather discouraged and only by joining NABS was the spark rekindled which encouraged me to keep trying.

I scrounged used lumber from friends, farmers, and others and put together 40 nesting boxes which were added to the 15 I already had. To learn more about all facets of bluebirding I attended an excellent workshop conducted by Robert M. Schutsky (*Sialia* 1:147) at the Muddy Run Recreational Park in Lancaster County, PA.

The next step was to get those boxes mounted in suitable locations. This involved moving the 15 that had not produced, as well as mounting the 40 that I had just constructed. As my wife and I drove around the countryside looking for good locations, we did spot two pairs of bluebirds. We were excited and immediately got permission to put up boxes near the place where we had seen the bluebirds. Part of the problem in prior years had been poor location of some of the nesting boxes. I believe this cannot be expressed often enough. If the boxes are not placed in a suitable location, you will not get bluebirds.

Our 55 boxes were placed on 29 properties. Not once were we turned down by a property owner when we asked permission to

place nesting boxes on their land.

As the nesting season progressed you can imagine our elation when we finally totaled 11 nesting pairs, many more than we had expected. It was a joy monitoring those boxes, counting the eggs, watching the young as they grew and developed and, naturally, worrying about them until they fledged. We did lose some to vandals, raccoons, and snakes, but 43 fledged in the first broods and 23 in the second nestings for a total of 71—a figure beyond our wildest hopes.

We found out why monitoring the boxes can be especially important. After one of the nests had fledged its young, I cleaned out the box. On my next inspection I found that House Sparrows had taken over. After I removed their nesting material three times, they abandoned the box, and the bluebirds returned to raise a second brood.

We have 50 more boxes cut out and hope to get most of them assembled and mounted before the 1981 nesting season begins. I have been asked by two groups to give a talk on bluebirds, so I have decided to purchase the NABS' slide program and try to get others in the area involved in increasing the bluebird population. Maybe some day in the near future the question, "Where have all the bluebirds gone?" will be a thing of the past in the northern part of Cecil County, MD. ■

P.O. Box 53
Rising Sun, MD 21911

February 3, 1981

Dear Mr. Bolger:

The North American Bluebird Society earnestly requests that the Post Office Department consider issuing a bluebird stamp, or stamps, representing the three species in the United States—Eastern, Mountain and Western. One or more of the three species nests in every state but Hawaii.

The beautiful bluebirds—long symbols of love, happiness, gentleness and renewed hope—have declined 80 to 90% in the last 40 years. The early colonists found them everywhere and yet today most Americans under 30 have never seen one. We cannot afford to lose these appealing little birds. Two of the species, Eastern and Western, embody our national colors of red, white and blue while the Mountain is predominantly blue.

This society is a nonprofit research and educational group dedicated to helping the bluebird make a comeback to our countryside by encouraging our citizens to put up nesting boxes and to put in bluebird trails across our continent. We know the interest to befriend this lovely bird is out there. When *Parade*, the Sunday newspaper magazine, published an article, "The Bluebirds Will Return If you Help," on November 25, 1979, our society received over 85,000 letters requesting more information and plans for bluebird nesting boxes.

The North American Bluebird Society was founded after the great response to the *National Geographic* article in June 1977 entitled, "Song Of Hope for the Bluebird," by Lawrence Zeleny. *Smithsonian Magazine* had published the plight of the bluebird with an article by Brooks Atkinson in April 1974 entitled, "Fewer Bluebirds are Heralding Spring's Return."

We would welcome the opportunity to appear before the Citizens' Stamp Advisory Committee to present our request. I may be reached at the address and telephone number below.

The bluebird deserves this nation's best effort to save it and a stamp would alert the country.

Sincerely,



(Mrs.) Jeanne Price
Chairman of Bluebird
Stamp Committee
10709 Gunston Road
Lorton, Virginia 22079
(703) 339-6347

cc: Citizens' Stamp Advisory Committee

Editor's Note: For information on how *you* can help encourage the adoption of a bluebird stamp, see Mary Janetatos' column, "Bluebird Tales."

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:

I am enjoying *Sialia*. Thanks for indexing the volumes we have received. I have had questions that I knew you had given answers to, so I can look them up easily.

Gladys Johnson
Elkhorn, Nebraska

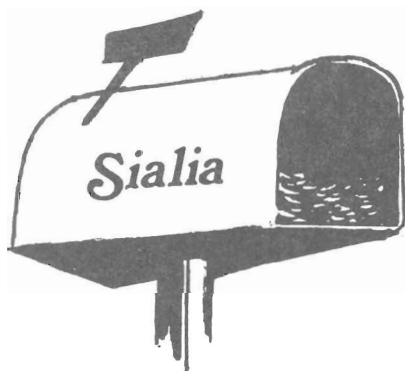
Dear Gladys Johnson:

We're glad you found the index helpful. Nancy MacClintock did a fine job indexing the first volume. She has completed the index for Volume 2 which you will find in this issue.

Dear Editor:

We saw our first bluebirds in 20 years while playing golf at the Oak Hills Club in Norwalk, CT. As I remember it was late October. There were five of them perched on the dividing fence at the 13th tee. At first we kept quiet so we wouldn't frighten them away. But they were not in the least worried about our presence, and soon there was quite a group of spectators who, like us, had not seen a bluebird in years.

We have a bluebird box to set up in the spring, but are not too optimistic about the results. We have only a little over an acre and a very large population of House Sparrows, titmice and



chickadees. We do border on one of the fairways of the golf course, but are separated from it by a 12 foot chain link fence. Just beyond the fence is the cart track where players are passing all day long. We will make the effort and hope for the best.

George T. Cushman
Norwalk, Connecticut

Dear George Cushman:

You seem to have good habitat for bluebirds and you have seen bluebirds in the vicinity so there is a chance for success with your box, but don't complain if titmice or chickadees use it instead. They are also attractive species which need our help. If House Sparrows try to take over the box, repeatedly remove their nesting material or plug the hole but don't let them raise young.

Dear Editor:

In spite of a disastrous breeding season in '80, I am thoroughly enjoying from four to as many as eight bluebirds in my yard at feeders and the bird bath each day.

The disaster for all three attempts last summer I think can be partially explained by extreme drought/heat and a predator. Here's hoping they will withstand whatever problems occur this season of '81.

Laurie Jones
Washington, Georgia

Dear Laurie Jones:

Sorry to hear you had bad luck last season. We too hope the problems are solved this year. We can't do anything about the weather but be sure to read carefully the article about predation in this issue. It may be of help to you.

Dear Editor:

As a current member of the Education Committee for NABS, I wonder if you would be interested in printing any of the enclosed notes from a fourth grade class. I presented the slide show to this group.

Lynne Peterson
Bemus Point, New York

Dear Lynne Peterson:

Although space does not allow us to print all the notes, two have been used below. Both are students at the Bemus Point School.

Dear Mrs. Peterson:

Thank you for coming. I enjoyed the film and the talking. The bluebirds look pretty and I'm going to build a birdhouse for the birds. I learned a lot of interesting stuff about birds. And thank you again.

Kimberly R. Thompson

Dear Mrs. Peterson:

Thank you very much for coming to tell us about the bluebirds. I enjoyed it very much. I learned a lot about the bluebirds when you showed the slides. I am planning on making a birdhouse and I will try to help the bluebirds live.

Heidi Oquist

Dear Editor:

I read Mr. Hausch's article "The Golf Course" in the Winter issue of *Sialia* (2:30-31) with interest because I am planning a trail of a similar nature. Perhaps my remarks to him will be useful to other readers who are interested in starting trails on golf courses.

I assume from remarks in your article that you are not a golfer, so in my next few remarks I'll "talk down" to you. Most golf courses have markers of some kind (barberry bushes, pine trees, wooden or metal poles, or even signs) that indicate to a golfer that he is 150 yards from the green. This helps the player determine which club to use if he is in line with the markers, short of, or beyond them.

I played a course at North Myrtle Beach a year ago last February where the management had used bluebird houses for 150 yard markers. They had installed a total of 28 nesting boxes around the course (markers are not used on the relatively short par 3 holes).

Since you are on good terms with the golf course superintendent, maybe he could be of some help so far as resources are concerned. Possibly you could extend this idea to the second nearby course that you mentioned.

John M. O'Rourke
Pittsburgh, Pennsylvania

Dear John O'Rourke:

I'm sure your instructive comments will be useful to Mr. Hausch as well as many of our readers. Perhaps your letter, along with the original article, will provide the needed incentive for some bluebirders to investigate the possibility of starting trails in what is prime bluebird habitat.



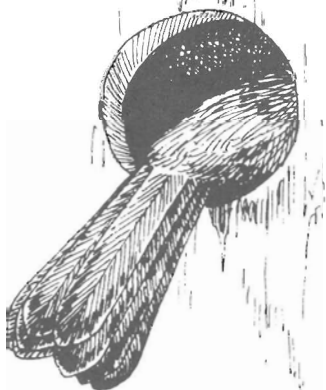
BLUEBIRD TALES

Mary D. Janetatos

I returned from a rainy Sunday afternoon with my parents, Anthony and Isabel Dougherty, to see seven telephone calls recorded on the message taker. I wondered what emergency might have resulted in someone trying to reach the Bluebird Society seven times in just a few hours, so I rewound the tape and listened. A child's voice said, "This is **Hans**. I want to know about bluebirds and my number is ----." Next call: "This is me again and I am very interested in bluebirds." Third call: "Why haven't you returned my call?" The fourth, fifth and sixth calls were just dial tones. I dialed the eager child and he told me he had found the number in the local yellow pages and just *had* to know all about bluebirds. That is why he had called *six* times. I promised to send him our informational packet immediately.

The Philadelphia Spring Flower Show, March 5-8, will focus on bluebird conservation. **Bob Schutsky** of the Muddy Run Ecological Laboratory arranged this at the request of **Dave Ellenberg**, of the Philadelphia Electric Company. Bob's successful efforts in alerting a utility company to its potential for helping bluebirds (see *Sialia* 1:146-147) have really paid off with this bonanza.

The First Regional Meeting of the North American Bluebird Society will be held in Brandon, Manitoba, June 26-28, 1981. Brandon University will host Canadian and U.S. visitors for talks and field trips in the area. Both Eastern and



Mountain Bluebirds nest in the Manitoba-Saskatchewan region, sometimes hybridizing. **Norah Lane, Lorne Scott**, and others are planning a great visit for us.

Ed Scircle of Rolla, MO, wrote of television coverage of bluebirds in Missouri. The Eastern Bluebird is the official state bird, so it was logical to focus on it during the Bird Week observed annually in March. To help with this observance, **Woody Bledsoe** is highlighting the bluebird activities of the Missouri State Department of Conservation. The Department's (**James**) **Dee Wilson** has long championed the bluebird in that state, having written articles in the *Missouri Conservationist* magazine.

The North American Bluebird Society's office is in Montgomery County, Maryland. Bluebirds were made officially welcome in a proclamation issued by that county's government, represented by **Charles Gilchrist**, County Executive, and **Ruth Spector**, President of the County Council.

In nearby Prince Georges County, the ceremony honoring

the official county bird, the Eastern Bluebird, was arranged by former NABS' president, **Marilyn Guerra**, long an active member of the county's Beautification Committee. As in years past, the County Executive, presently **Lawrence Hogan**, issued a proclamation naming the first week in March as "Bluebird Week," also signed by Council President, **Parris Glending**.

Alabama's TV coverage came thanks to the efforts of **Gerald Hartley** in New Brockton, AL. We have heard from viewers of his program who want to know how they can further help bluebirds.

Under **Alma Winton's** guidance, the Juniata County (south central Pennsylvania) Conservation District promoted bluebird conservation during its spring seedling sale by selling nestboxes. NABS' color brochures as well as reporting forms were included with each box.

We have learned of several Eagle Scout awards won upon completion of bluebird projects. One of these was the work of **John C. Sutton**, of Phillipsburg, NJ. We quote from his report: "This project will benefit the community by providing nesting places and promoting the propagation of bluebirds."

Darlington, Wisconsin, eighth grader **Christine L. McDaniel**, has chosen the bluebird as the theme of her Science Fair project. She describes her project this way: "I will be mapping the Eastern Bluebird's migratory route and showing on a map the areas in which they live and where bluebird trails have been established. I plan to do all the research possible on my subject and tell in my log exactly what we did with the bluebirds."

Eight year old **Matt Bassett** of Silver Spring, MD, is always ready to help his next door neighbor, NABS' board member, **Tom Tait**. **Laura Hebblethwaite** of Oklahoma City, OK, who is secretary of the "Busy Bee Blue Birds," writes that her second grade junior Camp Fire group wants to work on the Save the Bluebird emblem. This project is fully described in the *Camp Fire Leadership* magazine, Winter 1981 issue.

All this enthusiasm and frenzied activity is easily understood by those of us who realize that the elusive bluebird can at any time cross our paths and our yards because many more people nowadays care enough to provide the very best in housing quarters. Are your 1981 bluebird nesting boxes in place???

Bluebird Postage Stamp

The North American Bluebird Society would like your help in encouraging the Postal Service to issue a bluebird stamp or stamps representing the three species of bluebirds in the United States. It would help us bring to the public's attention the sad fact of the declining bluebird population and the need for nesting boxes. Garden clubs, birding societies, stamp collectors, as well as other groups and individuals, can help by writing to the following address:

Citizens' Stamp Advisory
Committee
Room 5536
Postal Service Headquarters
L'Enfant Plaza
Washington, DC 20024

A letter to your senators and congressmen also would be of great assistance. Befriend the bluebird! ■

BIRDHOUSE

Well, a chickadee came to the house on the pole—
It's the one where the purple grapes grow,
And he studied the view looking out through the hole,
Just to see how he'd fare in a blow.
Well, he liked what he saw, for he stayed three days long,
Then he left, but he never came back,
So I guess that his mate liked a traveling bird's song,
And he had no more use for the shack.

Then a busy, brown wren bustled in on a hunt,
And he seemed to be pleased with the place,
For the blossoms were pink on the bush out in front,
And the white shrubs behind spread like lace,
With a fence on one side to protect him from harm
And a rose that climbed near to the sky.
But our dog ran and barked in some silly alarm,
And wren left without saying good-bye.

Then a bluebird came by to observe from a tree
And he flew to the fence for a look
At the robins and catbirds who live there for free
In the garden where each has a nook.
Well, the roof overhangs in a way that appealed
And the view from the hole is the best
So he went for his bride, then the wedding bells pealed;
Now the house on the pole has a nest.

Sam Hall

HOW MANY BLUEBIRDS?

How many bluebirds have we helped this spring
To find a home, that we may strive to bring
Declining numbers of a bird that's rare
To greater heights; that we may all share
The sheer delight of watching as they grow,
And (guided by mysterious forces), know
They may return to find another spring
The home we *did* provide them. So let's swing
Into the movement that is growing strong
To help the bluebird; we just *can't* go wrong!

Won't *YOU* come along?

Katharine M. Braun

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(Schutsky—continued from page 59)

some unanticipated human interference in the vicinity of the nest box which caused the House Sparrow to desert the nest. I will attempt to keep several House Sparrows on reserve as foster parents for Creation '81.

Conclusion:

People can be a major problem on some bluebird nesting trails. Shooting, vandalism, and other thoughtless acts are common in some areas and may even be a major cause of nest failure. However, through careful box placement, public involvement, and education programs I feel this problem can be reduced and kept to a minimum. More importantly, exposing the public to the concept of the bluebird nesting trail creates new interest, enabling more and more people to become involved in helping the bluebird. ■

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