

Sialia

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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 *sialia*, 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 juvenile 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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About Bluebirds

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COVER

A young monitor checking the contents of a nesting box is shown in silhouette by Craig Roost of Whitewater, Wisconsin.

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 Graeoch Road, Laurel, Maryland 20723.

Presidential Points

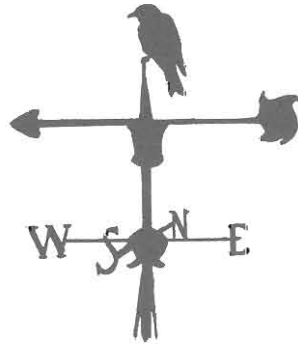
Sadie Dorber

The past winter was relatively mild. On several occasions the weather forecast predicted ten or twelve inches of snow, but it never resulted in more than four or five so there were few birds at the feeders. Many people called to report bluebird sightings. I guess with the mild weather, many bluebirds had decided to stay in New York.

Spring migration started earlier than usual. Geese were flying north and large flocks of robins were on the lawn and in the fields. Thirteen Purple Finches were at the feeder daily—the largest number I could remember having at one time. Bluebirds were sighted in the field near a pair of boxes. Mild weather pushed up the early daffodils and spring arrived on the calendar. Pleasant weather ended abruptly when the temperatures dropped and many days were snowy. Pine Siskins and Evening Grosbeaks came to the feeders for the first time and the daffodils turned brown.

The importance of wildlife plantings became very apparent. Bluebirds were feeding on the sumac daily while robins fed on the crab apples until the supply was depleted. Over the years, the crab apple tree has proven to be a valuable food supply for wildlife. Deer stand on their hind legs and eat all the apples they can reach. Turkeys walk to the tree and fly up to the branches to sample the fruit. Last fall the deer were feeding in the field while turkeys were feeding on the crab apples. Apparently, the deer realized a few apples would fall to the ground so they quickly came to the tree. It was quite a sight to see a tree full of turkeys with deer standing underneath waiting for the apples to fall.

Each spring, we see the tom turkeys displaying for a group of hens in the back field. How handsome, each male is with his tail in a fan, his wings puffed and pointed toward the ground. He runs around so smoothly in an at-



tempt to keep the hens together that it appears he's on roller skates. I never tire of watching this courtship.

Every once in a while, we sight an exciting bird. A few years ago a Golden Eagle was here for a few days; recently a Merlin spent the day viewing the bird feeders. With his obvious presence, none of the birds were coming to the feeders except chickadees. They all seemed to gang up and were extremely vocal. The next day the feeders were again active, so we assumed the Merlin had continued his journey north.

Every year during migration, many birders from this area make a trip to Montezuma National Wildlife Refuge to view the geese, ducks, and anything else that might be stopping over to rest and feed. The refuge is located at the northern end of Cayuga Lake and is an easy drive for us. During the past few years the refuge has been very active in promoting the bluebird. Along with the many bluebird programs they present, a trail has been started on farmland surrounding the refuge. They needed more NABS brochures and we wanted to visit the refuge during peak migration, so early one morning we left for Montezuma. Hundreds of geese were still there and the graceful Tundra Swans were moving across the open water. Two male Buffleheads were both trying desperately to get the attention of a female. As we neared the end of the auto route, the day was made complete when one of the nesting Bald Eagles flew across the tree line in front of us. ■

Spring Weather Can Be a Killer

Charlotte C. Corkran

Living in western Oregon as I do, it's awfully easy to blame everything on the rain: blue funks, wimpy vegetable gardens, poor voter turnout at elections, and on and on. Sometimes, however, dreary weather affects the non-human residents of the state, too.

For the last eight years, I have spent an exorbitant amount of time peering into chickadee, duck, swallow, and bluebird nest boxes. I work on projects of the Northwest Ecological Research Institute. Our bluebird study (which has been helped by several generous grants from the North American Bluebird Society) is in central Oregon, on the east side of the Cascade Range, where it's supposed to be dry. We have almost 300 bluebird boxes that we have checked every two weeks during each breeding season since 1988. We are studying whether chemical spraying for grasshopper control affects the reproductive success of Western and Mountain Bluebirds (*Sialia mexicana* and *S. currucoides*).

Frequently the weather in central Oregon is sunny and hot, but every spring there are periods of cold, rainy, windy weather that are not only miserable for us box monitors, but fatal to some of the bluebirds and other cavity nesting birds as well. Even on the rainy west side of the mountains, where you'd think the birds would have evolved to cope with nasty spring weather, a prolonged period of cold and rain will cause the death of considerable numbers of birds. Usually young nestlings die or unhatched eggs fail to hatch, leaving the adults to try nesting again when the weather improves; occasionally, the cruelest weather takes the lives of adult birds as well.

While spring weather is the real culprit, the immediate cause of death is usually either starvation or hypothermia, or both. Starvation may be the most frequent cause of death of both adults and nestlings. Although spring is a time of abundant flowers, fruits

have not yet formed or ripened, and last year's fruits have either rotted or been eaten. Spring is a time of hatching insects, but during periods of cold, wet weather, insects become inactive and hide in protected places. While chickadees rarely starve, because they are adapted to searching for hidden seeds and insects, it is much harder for bluebirds, that rely on seeing insects move, to survive. What happens to swallows that depend on high flying insects? Tree Swallows (*Tachycineta bicolor*) are especially susceptible to adverse weather conditions, because they arrive so early and because the availability of their prey is so strongly influenced by weather. Almost every spring I have found dead adult Tree Swallows in nest boxes in which the entrance is only 2 inches above the floor and on sites with no pesticide use. During the spring of 1991 (the spring that did not come to central Oregon until July), for the first time, I found adult bluebirds in our boxes that had died of starvation—nine dead adults in all. I do not believe that weakened birds are trapped in the boxes and die. I believe that weather is the killer; probably our nest boxes provide shelter to individual swallows and bluebirds that would otherwise die.

Insects provide protein for nestling birds of many species, even those that prefer fruit or seeds as adults. Grasshoppers, the preferred food for our bluebirds to feed to nestlings, do not hatch until the eggs are warmed by days of sun. The eggs are safe from even the worst weather. Once the grasshoppers hatch, however, prolonged periods of cold, wet weather keep them inactive so that they may starve, and can allow the rapid spread of diseases that can kill off grasshoppers by the thousands. When the weather turns bad, enterprising bluebird parents find spiders, beetles, and crickets, but often not enough to keep hungry young bellies full.

Hypothermia or chilling is the other major cause of spring deaths among birds, and often occurs in combination with starvation. Before they are fully feathered, during the first 10 days after hatching, nestlings are unable to maintain their own body heat. Eggs chill easily, too; especially in the second week of incubation, chilling is usually fatal. Prolonged stormy weather means many opportunities for either eggs or nestlings to become chilled. When cold storms blow in, parents have a difficult choice to make: going out to search for food or staying in the nest to keep young babies warm. Adult birds are also vulnerable because soaked feathers provide little insulation and energy reserves are rapidly depleted. Even before they start to nest, adult birds may have to choose between the risks of chilling when trying to search for food and starving when trying to stay warm.

Abandonment of bluebird nests is a frequent occurrence in early spring; in my experience, it is almost always caused by bad weather. The immediate cause of death is hypothermia, in combination with starvation in the case of nestlings. If bad weather persists for more than a few days, adult birds must stop feeding nestlings or incubating eggs and must concentrate on their own survival. If the adults die, the babies or eggs will die anyway, but if the adults survive, they can nest again. Many more nests are abandoned with eggs than with nestlings. I have found several instances of four layers of nests with eggs abandoned. The parents stick with the same box because the problem was with the weather, not with the box. (On the other hand, bluebirds and chickadees will always move to another nest site if a predator successfully invades a box.)

To humans, the abandonment of babies sounds cruel, and we don't like to think of our beautiful bluebirds as not being good parents. The truth is that they are good parents, as all of us know who have watched an adult male attack a predator near the nest, or who have found the torn body of a dead parent draped over a nestful of eggs. Blue-

bird parents abandon eggs or nestlings when they have no other choice. In Oregon, spring is notorious for coming and going repeatedly before summer suddenly settles in. Under those conditions, abandonment and re-nesting is a necessary strategy for bluebirds to survive and reproduce most successfully.

Earl Gillis, who organizes volunteers and maintains bluebird trails in northwestern Oregon (*Sialia* 11(4):127-130), reports that periods of bad weather in spring cause many bluebird nest failures in his area, too. He has done some pioneering work in identifying which are the most vulnerable days in the nesting cycle for weather-related failures, and in determining the length and degree of nasty weather likely to be fatal. Earl's work has been very helpful to our bluebird study in eastern Oregon, and we are working together to more precisely correlate nest failures with weather patterns. More importantly, trail monitors now know when it might be critical to replace wet nest material and put out mealworms, saving bluebird nestlings that would otherwise have died during cold, wet periods. These desperate measures are taken in a region where bluebirds are fighting for survival against loss of habitat, introduced competitors, and pesticides. Even where bluebirds are doing fairly well, we should put up nest boxes that face away from the local prevailing storm track. When spring weather becomes a killer, although eggs may be abandoned and young nestlings may starve, the adults may survive to nest again when the sun returns. ■

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Karen Blackburn's New Address

Observations concerning bluebirds and plantings should be directed to Karen Blackburn. Her new address is 185 Mica Hill Rd., Durham, CT 06422.

Evaluation of Nest Box Sites Selected By Eastern Bluebirds, Tree Swallows, and House Wrens¹

Steven G. Parren

Secondary cavity nesters may be limited more by the availability of nesting cavities than by food (von Haartman 1957:339). Placement of nest boxes in suitable habitat can increase populations of cavity nesting birds, especially when numbers of natural cavities are limiting (Yoakum *et al.* 1980). Nest box management has compensated for reduced availability of natural nest sites for Eastern Bluebirds (*Sialia sialis*) due, in part, to habitat change and competition with the introduced House Sparrow (*Passer domesticus*) and European Starling (*Sturnus vulgaris*) (Zeleny 1978). Tree Swallows (*Tachycineta bicolor*) and House Wrens (*Troglodytes aedon*) are native species that compete with Eastern Bluebirds for nest sites and readily accept nest boxes designed for bluebirds. It is only legal to remove House Sparrows and European Starlings, along with their nests and eggs, from bluebird nest boxes.

The Eastern Bluebird generally selects nest boxes placed in open habitat containing perches from which it hunts for insects. Although descriptions of habitats used by bluebirds are available (Zeleny 1985a), nest boxes located in seemingly suitable bluebird habitat may not be occupied, may be used by swallows and wrens, or may be deserted by nesting bluebirds due to the activity of wrens or other animals. Boone (1982) suggested experimenting with suitable bluebird habitat by moving unsuccessful boxes to new locations, but only general habitat descriptions were provided as guidance. Quantitative analysis of bluebird nest box selection has included box con-

struction and habitat features (Willner *et al.* 1983, Munro and Rounds 1985). Although useful insights and recommendations have been offered, siting criteria remain ambiguous.

More specific habitat guidelines for siting nest boxes intended for Eastern Bluebirds would enhance nest box management for this species. Pairing of boxes has been reported to be an effective means of alleviating competition between bluebirds and swallows (Prigge 1981, 1982; Prescott 1982; Gardiner and Stiles 1985). Although this technique also may prove useful when wrens are involved, wrens remain a potential threat to nearby nesters because they may remove eggs or kill nestlings (Zeleny 1985b, Parren 1989, Quinn and Holroyd 1989). My objectives, therefore, were to quantify differences in habitat components surrounding nest boxes used by Eastern Bluebirds, Tree Swallows, and House Wrens and unused boxes; incorporate costs of misclassification of nest box sites; and provide specific bluebird nest box siting guidelines.

Study Areas and Methods

Eighty-seven nest boxes were placed on three areas in Vermont during March 1986 in a variety of habitat types thought to be potentially suitable for bluebird nesting. One area was a 7-acre (3 ha) parcel located between the Champlain Valley and the Green Mountains ($n = 26$). This agricultural—residential area provided a mixture of lawn, meadow, and old orchard reverting to brushland and woods. Boxes were also placed on a 230-acre (93 ha) nature center ($n = 41$). The

¹ This article has been developed from the following paper which appeared in the *Wildlife Society Bulletin*: Parren, S.G. 1991. Evaluation of nest-box sites selected by Eastern Bluebirds, Tree Swallows, and House Wrens. *Wildl. Soc. Bull.* 19:270-277.

nature center lands provided open brushland, field, and mowed meadow. The third area comprised 2 clear-cuttings in the Green Mountain National Forest (5 and 25 acres [2 and 10 ha]) that were further removed from human habitation than the previously described areas ($n = 20$).

Heights of nest boxes were varied from 47 to 79 in. (120-200 cm), and spacing between boxes ranged from 0.5 to 98 ft. (0.1 to 30.0 m). Boxes were set out in a predetermined pattern of height, spacing, and compass direction to provide a wide range of nest site choices. The 87 nest boxes were monitored from 22 April to 30 August, 1986 and 1987. A nest box was considered used by a species if it contained a complete nest or if a wren dummy nest filled the box to the entrance. By including data from comparable nest boxes ($n = 134$) maintained by interested individuals, I was able to analyze information from a total of 13 townships. Only boxes with a 1.5-in. (3.8 cm) diameter entrance hole ≥ 5 in. (12.7 cm) above the floor were included in this study (Parren 1989).

I measured 10 habitat variables at 221 different nest box sites during 1986 and 1987 (Table 1). Woody stems < 0.8 -in. (2 cm) diameter, including *Rubus*

spp., and woody stems > 0.8 -in. diameter were counted within a 10-ft. (3 m) radius around each nest box. Distances to nearest perch > 3 -ft. (1 m) height, perch > 10 -ft. height, and closed canopy (i.e., ≥ 4 trees, > 13 -ft. (4 m) height with crowns touching) were paced from each nest box. Area (acre) of open habitat in which each box was located was estimated based on paced distances. The direction each box faced was measured with a hand-held compass and transformed into a north-south continuum with north 0 and south 180. Ground slope was measured with a clinometer in the direction each box faced. Height from ground to the bottom of the entrance hole was measured with a tape measure. Distance to a landscape feature such as a road, hedgerow, or forest edge that delineated the open space surrounding a nest box was paced to the farthest portion visible within 45 degrees of arc either side of the entrance hole. A single tree directly in front of the entrance might result in a small measure, while a box facing a nearby edge at an oblique angle might have a large distance measure.

I used two statistical techniques to classify nest sites used by bluebirds, swallows, and wrens and unused

Table 1. Habitat variables measured at nest box sites used by Eastern Bluebirds, Tree Swallows, and House Wrens, and at unused sites, Vermont, 1986-1987.

Mnemonic	Variable description
STEM1	woody stems < 0.8 -in. diameter within 10-ft. radius (No.)
STEM2	woody stems ≥ 0.8 -in. diameter within 10-ft. radius (No.)
PERCH1	distance to nearest perch > 3 -ft. height (ft.)
PERCH2	distance to nearest perch > 10 -ft. height (ft.)
TREE	distance to closed canopy defined as ≥ 4 trees, > 13 -ft. height, crowns touching (ft.)
AREA	estimate of size of open area (acre)
BFACE	direction box faced converted to north-south gradient (0 to 180 degrees)
SLOPE	ground slope in direction box faced (%)
HEIGHT	height to cavity entrance (in.)
VIEW	farthest distance visible within 45 degrees of arc either side of entrance to landscape feature (ft.)

sites: stepwise discriminant function analysis and logistic regression. Nest sites used by bluebirds and swallows were compared to available sites not used by any species. Because wrens can and do evict nesting bluebirds and swallows, and will build over an existing nest, I considered boxes used by either of these species as unused by wrens. Nest site differences among species also were investigated. A nest box site was assigned to the species detected nesting first, and subsequent use of the box was ignored for this study except when a wren commandeered a nest box. Boxes used by other bird species or flying squirrels (*Glaucomys* sp.) were excluded from the analyses.

I set the cost of misclassifying wren sites as twice that of bluebird sites because wrens occasionally destroy nests of nearby nesters. Falsely classifying a wren site as a bluebird site could result in destruction of a bluebird nest, while falsely classifying a bluebird site as a wren site would result in the more easily tolerated error of bypassing a potentially productive site for bluebirds. I set the cost of misclassifying swallow sites as half that of bluebird sites because competition between these species can be managed with nest box pairing. For consistency, I set the cost of misclassifying wren sites four times that of swallow sites. I examined the utility of statistical models by constructing predic-

tive equations from nest site data collected for each species from the same eight townships and then classifying independent cases from the five remaining townships.

Results

Bluebirds, swallows, and wrens were found throughout the range of elevations and geographic locations sampled, but not always together at an individual location. Nesting periods overlapped, and I detected two occurrences of wrens displacing other bird species from occupied nest sites. Swallows left the nest site after fledging one brood, but bluebirds and wrens commonly had a second brood. Average values for 9 of the 10 measured habitat characteristics for box sites used by swallows were intermediate to those for sites used by bluebirds and wrens (Table 2). Black-capped Chickadees (*Parus atricapillus*), House Sparrows, and flying squirrels used 6 nest boxes.

I compared 30 bluebird nest sites to 45 unused sites. Bluebird nest sites had fewer small woody stems under and around the box and were farther from high perches. Classification of the same data resulted in 70.0% of bluebird sites and 86.7% of unused sites being correctly classified. Using independent data, 54.5% of 22 bluebird sites and 69.2% of 13 unused sites were classified correctly.

Table 2. Average values of habitat characteristics for Eastern Bluebird, Tree Swallow, House Wren, and unused nest box sites, Vermont, 1986-1987.

	Bluebird	Swallow	Wren	Unused
<i>n</i>	52	78	33	58
STEM1	22	32	41	80
STEM2	1	3	4	4
PERCH1	13	9	6	6
PERCH2	46	27	13	18
TREE	90	84	41	66
AREA	9	6	4	6
BFACE	104	109	121	91
SLOPE	-1.1	-0.8	-3.9	+1.8
HEIGHT	66	67	70	67
VIEW	400	289	246	279

Tree Swallow nest sites ($n = 43$) also had fewer small woody stems under and around the box than 45 unused sites. Using the same data, 62.8% of swallow sites and 77.8% of unused sites were classified correctly. Classification of independent data resulted in 65.7% of 35 swallow sites and 46.2% of 13 unused sites being classified correctly. Wren sites ($n = 20$), relative to 118 sites unused by this species, were in smaller openings, closer to high perches, and faced downslope. The statistical model correctly classified 45.0% of wren sites and 93.2% of unused sites when using the same data. Classification of independent data resulted in 38.5% of 13 wren sites and 84.3% of 70 unused sites being correctly classified.

Bluebird nest sites were located in larger open areas than were swallow sites. Inclusion of size of open area in the model improved prediction. Using the same data, the model classified 83.3% of bluebird sites and 30.2% of swallow sites correctly. Classification of independent data resulted in 72.7% of the bluebird sites and 28.6% of the swallow sites being correctly classified.

Bluebird sites were farther from high perches and provided a longer view from the box entrance than wren sites. Classification of the same data resulted in 73.3% of bluebird sites and 80.0% of wren sites being classified correctly. Using independent data, 81.8% of 22 bluebird sites and 53.8% of 13 wren sites were correctly classified.

A swallow-wren model showed that swallow nest boxes provided a longer field of view and were farther from high perches than boxes used by wrens. Inclusion of field of view and distance to high perch improved model prediction. Using the same data, 44.2% of swallow sites and 90.0% of wren sites were classified correctly. Classification of independent data resulted in 40.0% of swallow sites and 61.5% of wren sites being correctly classified.

A three species model of nest box use showed bluebird sites to be in the

largest openings, farthest from high perches, and to have the longest field of view. The wren was the most separated group, and the swallow sites were intermediate to those of the other species. This three group model correctly classified 70.0% of bluebird sites, a single swallow site, and 80.0% of wren sites. When classifying independent data, 76.9% of bluebird sites, no swallow sites, and 72.7% of wren sites were assigned to groups correctly. Considering bluebirds and wrens only, I found that classifications of the original and independent data were both significantly better than expected by chance.

More bluebirds nested ≥ 33 ft. (10 m) from a high perch than expected by chance, while wrens used only one nest box ≥ 33 ft. away from a high perch. All occurrences of flying squirrel nest box activity and wren disturbances of other nesters were < 33 ft. from a high perch, as well as 78% of 18 detected disturbances of nest boxes by raccoons (*Procyon lotor*).

Discussion

The characteristics of habitat surrounding nest boxes used by Eastern Bluebirds, Tree Swallows, and House Wrens in Vermont were not exclusively different; Parren (1989) reported nest boxes used by >1 species. Overlap among these species also has been reported for nesting habitat in Maryland (Willner *et al.* 1983) and Manitoba (Munro and Rounds 1985). If available nesting cavities are more limiting than food for secondary cavity nesters, then surrounding habitat might be less important than the availability of a cavity. Boxes in suboptimal habitat may be used if access to cavities in better habitat is limited.

A species' absence might be due to unsuitable habitat, other factors, or nondetection of a species when present (Johnson 1981). Presence in this study was based on nest construction, and determination of nest box use was clear. Factors other than habitat suitability that may influence nest box use include intra- and interspecific compe-

tition, and distribution and abundance of species and nesting cavities. The uncertainty intrinsic to unused sites was lessened by excluding boxes used by other species.

Correct classification of independent data was less than that of the original data, but likely displayed more realistic assessments of model utility. As stated by Johnson (1981:16), "The validation of models is particularly important if we are to present them to resource managers for their use." Sites used by bluebirds had fewer small woody stems, were farther from high perches, and were in larger openings than were unused sites. The classification of independent data, while not significant, would be expected to occur by chance only once in 14 trials. Sites with ≤ 25 small stems were used nearly twice as often by bluebirds as sites having more stems. The habitat models separating swallow sites from unused and bluebird sites did not classify independent data better than chance. Bluebird and swallow nest sites were not sufficiently different to provide useful habitat guidelines for managing competition between these two species.

Bluebird sites were located in large openings well away from woodland and edges and had a long field of view, whereas wrens readily accepted nest boxes with nearby trees and shrubs that might limit visibility. Wrens used some nest boxes that were enveloped in surrounding vegetation and others that were in open areas, but proximity to trees or large shrubs seemed to be the common feature. Wren nesting habitat has been described as "brushy areas" and wrens have been reported to "prefer to nest close to shrubbery or underbrush of any kind" (Zeleny 1985b:58). Wrens did nest in areas I would describe as "brushy," but areas with the most small woody stems were not used. Finch (1989) reported that House Wrens in forested habitat selected sites with less woody ground cover than unused sites. The lack of association between small woody stems and wren nest sites in my study may indi-

cate the lack of appeal of this habitat feature in relatively open habitats.

Wren sites were closer to high perches and in smaller openings than were sites unused by wrens. Although classification of independent data for wrens was not significantly better than chance, it did reinforce the importance of distance from a high perch and size of opening. Swallow and wren sites did not differ as much as bluebird and wren sites. When sites of all three species were examined together, a gradient was depicted of bluebird sites in large openings away from high perches and with a long field of view, wren sites in small openings close to high perches and other habitat features that might limit visibility, and swallows with an intermediate position. The poor classification of swallow nest box sites in a three species model was partially due to the lower cost of misclassification set for swallows. Like Munro and Rounds (1985), I found Tree Swallows to be the least selective of nesting habitat.

Munro and Rounds (1985) noted a strong negative association between bluebird nest sites and utility lines. They speculated that this might have been due to American Kestrel (*Falco sparverius*) attacks on adults entering and leaving nests in Manitoba. Kestrels were present on Vermont study areas and hunted fields with nesting bluebirds. Utility lines were not a dominant habitat feature and were considered high perches along with live and dead trees. Avoidance of kestrels might explain bluebird nest sites being farther from high perches than unused sites in some situations. A box used by bluebirds was unoccupied the year kestrels used it for a feeding perch. Kestrels often hunted by hovering, and no box location was protected from this behavior. Two kestrels in different areas were observed attempting to snatch nestlings from nest box entrances.

Nest boxes located close to woodland edge, large shrubs, or trees showed more evidence of flying squirrel and wren activity than sites further removed from high perches. Squirrels

and wrens both occupied nest boxes and disturbed those used by other species. Raccoon disturbance was detected on more boxes close to high perches, which may also make these locations less suitable for bluebird nesting. Rendell and Robertson (1990) reported that in hayfield sites in Ontario, House Wrens only used boxes ≤ 98 ft. (30 m) from forest edge, Eastern Bluebird use ranged 33-98 ft. (10-30 m) from forest edge, and Tree Swallows used sites 10-328 ft. (3-100 m) from edge and tended to use boxes farther from edge than the other species. They concluded that swallows may avoid nesting close to forest edge in response to interference by competing species, especially wrens. Tuttle (1991) suggested placement of nest boxes 120 ft. (36.6 m) from brush, which may discourage House Wrens because they will be mobbed by Tree Swallows as they attempt to fly across the open habitat. Although this could provide a more secure nest site for Eastern Bluebirds, he admitted that this placement scheme is not feasible in many areas of open habitat due to size limitations.

Summary and Management Implications

I examined nesting habitat of Eastern Bluebirds, Tree Swallows, and House Wrens, secondary cavity nesters that compete for nest boxes, and evaluated discriminant function analysis and logistic regression classifications with independent data. Bluebird nest sites were located in larger areas of open habitat, were farther from high perches, including woodland edge, and had better visibility from the nest box entrance than wren sites. Swallow nesting habitat was not clearly discriminated from that of bluebirds or wrens. Bluebirds appeared to avoid sites with many small woody stems.

I recommend mounting nest boxes on posts placed ≥ 33 ft. (10 m) from a high perch in open habitat ≥ 1 acre (0.4 ha) with a field of view from the nest box entrance of ≥ 33 ft. These criteria satisfy statistical models separating bluebird sites from wren sites. Bluebirds will nest in boxes that do not

meet the above criteria, and I observed some bluebirds nesting in locations I judged to be poor habitat. Sites that met these guidelines, however, were used more by bluebirds than expected by chance, were not used more than expected by chance by swallows, and were used only once by wrens. The ≥ 33 m from a high perch criterion is distinctly different from the recommendation by Scott *et al.* (1977) of placing boxes at a forest edge. I also think it would be helpful to avoid sites with many woody stems.

A box in suboptimal habitat may be better than no box if availability of nest sites is poor, especially when monitoring allows potential problems to be readily addressed. Although nest box locations will not prevent swallows from using nest boxes intended for bluebirds, pairing nest boxes can alleviate this competition. ■

Acknowledgements

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Bluebirds Over Georgia Formed

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Nongame & Natural Heritage Program
Vermont Fish & Wildlife Department
103 South Main Street
Waterbury, VT 05676

A new state organization, Bluebirds Over Georgia, was formed on 22 February 1992. Frances Sawyer will serve as president of the group.

The primary objective of Bluebirds Over Georgia is to educate Georgians of all ages about the needs of bluebirds: correct nest box placement, monitoring techniques, and useful plantings.

Initial projects include the following:

1. Bluebird Fair, 11 April 1992, Stone Mountain, Georgia.
2. Rework the bluebird trail around the governor's mansion in Atlanta.
3. Plan to host the annual meeting of the North American Bluebird Society at the Calloway Gardens in Pine Mountain, Georgia, within the near future.
4. Submit the Eastern Bluebird as our choice to be the mascot for the 1996 Summer Olympics to be held in Atlanta, Georgia.
5. Hold quarterly meetings at various locations in the state to let people know that Bluebirds Over Georgia is for all Georgians.

For membership information, please contact President Frances Sawyer, 5858 Silver Ridge Drive, Stone Mountain, GA 30087.

—Betty Goza, Publicity

NABS Research Award Correction

The 1992 NABS Research Awards announcement in *Sialia* 14(2): 62 failed to specify the sponsor of one of the student grants. It should have read as follows:

Janice Simpkin, University of Nevada, Reno
The Bluebird Recovery Program Award
Topic: Reestablishment of a Bluebird Metapopulation in Central Nevada and Dispersal Dynamics Within the Metapopulation

We regret the omission.

Chilled Egg Phenomenon

Robert Weidner

I owned and operated a chicken hatchery for 26 years where we incubated 44,000 eggs each season without interruption from 1 February to 15 June.

First of all, eggs don't have to freeze to cause them not to hatch. Chilled eggs also will not hatch; when they are not quite chilled to the same extent, they might hatch but will result in what we call "sticky chicks."

There is a layer of mucus between the shell and the chick that allows the chick to make a complete circle inside the egg in order to peck off the cap of the shell, creating a hole that it can crawl through. Chilled eggs result in the mucus becoming glue-like rather than remaining the slippery substance that it is supposed to be.

If eggs are chilled, the chick picks a few holes in the cap (from inside the egg) and obtains enough air so that it stays alive, but it cannot make the necessary circle within the egg to peck enough of the cap to exit. It might struggle for four or five days before it gets out—if it doesn't die in the shell. For chickens, bluebirds, and many other birds, this delay in emergence causes the uneven size of nestlings within a brood.

A chick will not starve in less than four or five days because it is hatched with the entire egg yolk inside of it. The yolk is connected to the chick's intestinal tract to provide food once breathing has begun and lasts during its first few days outside the egg. For the chicken, this is the time needed until it learns to find its own food or to respond to the mother hen's clucking call indicating that food is available.

If bluebird eggs are being incubated *significantly* beyond the 13-16 day period, it is advisable to take one of the eggs and break it on a saucer and observe the chick. If it is alive, it will move and kick, etc. If it has died during incubation, you will see a partially developed chick and the entire

egg yolk. (The chick is formed exclusively out of the "white" of the egg.)

The yolk is absorbed into the navel of the chick in the last two days before hatching. With experience, you can tell by the size of the chick just about on what day of incubation it died in the shell.

We sometimes received chilled eggs in shipping during the early part of the hatching season (February); the eggs had been left outside at a railroad or truck terminal or were transported in an unheated truck. We experienced between 5% and 25% hatching success from chilled eggs compared with a normal success rate of from 85-95%.

There is no way to detect chilled eggs before incubation. We can, however, detect frozen eggs because they will crack from freezing just as a car's engine cracks when freezing in winter if it does not contain anti-freeze.

Chickens and songbirds (including bluebirds) do not "set" or incubate the eggs until all of the clutch of four or five (sometimes more or less) are laid. The female purposely stays off the nest until the clutch is complete so all eggs will hatch at about the same time.

The female lays one egg per day until the clutch is complete. Under cool, not freezing, conditions eggs will keep very well for two weeks until incubation is started. We even kept some chicken eggs longer without sacrificing hatchability.

A bird probably doesn't know that while she is delaying incubation until all her eggs are laid, they are being chilled or frozen. With a change in the weather during those four or five days, some of the eggs may not experience the cold weather. Therefore, the last eggs laid might hatch very well while the first eggs laid might have been chilled.

Normally, when eggs hit 99.5° F incubation begins. In the case of chick-

ens, 21 days later to the hour after the heat was turned on we "took off the hatch."

I'm assuming that birds have everything down pat except the weather because, in the hatching business, even with our sophisticated electronic machinery, we could never get the high rate of hatchability that the mother hen could get from her eggs.

Also, I assume that the bird does not know how many days she has been setting; if all her eggs were spoiled by chilling she, I believe, will continue to incubate them indefinitely. If she is still incubating ten days to two weeks later than 14 days, I think it would be advisable to take all the eggs out of the nest to prompt her to lay a second clutch of eggs and begin her incubation anew. Otherwise, she might incubate too long and run out of time to hatch the second brood in some parts of the continent.

Although concern is sometimes

expressed that in the spring birds are forced to spend time away from their nests due to cold weather causing a lack of insects, I believe they are purposely staying off the nest until all of the eggs are laid. Hens will miss a day of laying approximately every 10 days. Perhaps wild birds also miss an occasional day so that the laying period might be seven to eight days for a six egg clutch.

I haven't mentioned that chilling eggs also will kill the fertility; you will not find a partially grown bird in an egg in which fertility has been lost. You will also find decayed eggs that were harmed by excessive chilling; the decaying may be due to the later effects of the high temperature during incubation. ■

East 2178 Hillside Rd.
Casco, WI 54205

This article was reprinted with permission from Wisconsin Bluebird 5(3):1-2.

Nest Box Sale Funds Outdoor Camp

The Cedar Grove-Belgium area [Wisconsin] school newsletter *bits-n-pieces* featured a nest box building project in their February 1992 issue. Seventh graders worked to raise money to fund their spring outdoor encampment by selling boxes.

After requesting assistance from the Cedar Grove Kiwanians, a group of volunteers headed by Wilfred Gesch, Sr. agreed to assist Mrs. O'Reilly's students. Rough cedar lumber was donated and planing equipment was made available by a local lumber yard. Gesch, along with Carl Westerbeke, Owen Meinen, and Don Veenendaal cut the boards to appropriate dimensions for bluebird and wren boxes. Ivan Beerink and Dr. Clarence Meeusen provided carpentry skills.

In addition to box construction, a presentation by Leo Nevela, "the bluebird man," was planned for a later date. His slide program would include suitable nest box placement and maintenance.

A poster contest was won by Jeryl Gantner. Mrs. Grundl's art class mass-produced the winning poster to assist in marketing the boxes. ■

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 Rehabilitation Association. He is well-known at nature centers and outdoor education organizations for his nature oriented songs.

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

Calgary, Alberta Area Bluebird Trails 1991

Donald J. Stiles

1991 was a good year for bluebirds, especially when compared to 1990 which was a poor year due to heavy rains during the nesting season. Most monitors reported that 1991 was their best year to date. Although there were some losses due to rain, these were mostly made up later in the season. Second broods were up dramatically from the previous year. A total of 5,362 Mountain Bluebirds fledged from 1,231 nests.

Tree Swallows were consistent with 4,748 fledging from 1,084 nests. House Wrens continued the rise noted last year: 51 nests in 1989, 97 in 1990, and 133 in 1991.

Myrna Pearman of Ellis Bird Farm reported that an Eastern Bluebird pair nested on her trail fledging one young. Western Bluebirds nested at Saskatchewan Crossing. This is the first time that both of these species have been known to nest in Alberta during the same year.

Ralph Gereln pointed out that Blake Stillings had had lots of bluebirds over the years, no matter what type of nest boxes he used. This suggests that habitat is the most important factor in attracting bluebirds. Ralph had a nest with eggs in one of his boxes which was a grassland sparrow (probably Clay-colored). The nesting material was grass; the eggs were blue with brown speckles and were slightly smaller than bluebird eggs. This is only the second time that this type of nest has been found on Calgary area bluebird trails. In neither case were the birds successful in hatching young.

Len Marshall mentioned two cases of nests which were alive with black fleas which he found when cleaning out boxes. He got bites from them. Two other monitors reported this situation also.

A total of 2,008 Mountain Bluebirds (163 adults, 1,845 young) and 973

Tree Swallows (168 adults, 805 young) were banded. This is significantly above the 1,447 bluebirds banded in 1990, but slightly down from 1,057 for Tree Swallows.

Wim and Marieke Jalink had a bluebird nest lined with horse hair on their trail. There were four different colored horses in the adjacent field; hair from all four was present in the nest.

Larger than average clutch sizes for both bluebirds and swallows were reported by several monitors. George Loades had nine bluebird clutches of seven eggs with eight of these pairs fledging all seven birds. Paul Michaud reported two bluebird clutches of seven eggs with second broods of five eggs. Jean Moore and Marney Armitage had one pair of bluebirds who successfully raised seven young in their first brood and six in their second brood. (Bluebirds in this box have successfully fledged seven young in first broods for the last three years.) Clutches of eight swallow eggs were reported by several monitors.

It is with a great deal of sadness that we note Blake Stillings' death last March. Blake is remembered with great affection and respect for his commitment in providing nest boxes to improve the breeding habitat for bluebirds and Tree Swallows. Between 1982 and 1990, Blake's boxes produced over 8,600 bluebirds and more than 7,000 Tree Swallows. We will miss him. ■

This report from the Calgary, Alberta area included material from Donald J. Stiles, Jean Moore, and the article following by Jean McCullough. Much of this information has been published in the bulletin of the Calgary Field Naturalists' Society.

20 Lake Wapta Rise SE
Calgary, Alberta
Canada T2J 2M9

Experiences with Tree Swallows in a Backyard Setting

Jean McCullough

Tree Swallows were first sighted on our North Haven property during the spring of 1981, but no nest box had been put up so they didn't stay. In the spring of 1982 some attention was given by a pair of swallows to a bluebird box we had placed on a telephone pole in the lane, but AGT requested its removal. By the time we relocated it on a 4 in. x 4 in. post in the yard, the swallows had left for the season. In 1983 the box was visited from mid-May to mid-June, but no nest was built.

Finally, in 1984, the box was occupied, and four young were hatched. When the time came for fledging, the adults tried to induce them out of the box by refusing to feed them at the hole. They were not successful. The next day all four nestlings were found dead in the box! This could explain the dead young I had sometimes found in previous years in boxes on my bluebird trail—beautiful full-grown young with no trace of blowfly larvae on their claws or peck-marks on their heads. This was my first observation of this behavior in parent Tree Swallows, and I determined to monitor the box in the future and force-fledge any young that didn't leave after the parents began withholding food.

In 1985 the box was again occupied and eggs laid, but the young were not fledged because of interference by House Sparrows. Eggs were dropped in the rockery below the box and on the lawn; one newly-hatched young was found in the swimming pool skimmer basket.

The question in 1986 was whether we should leave the box up and let the swallows try again, or forget the hassle and remove it? We left it up and had the joy of watching five young fledge. I force-fledged a sixth.

In 1987 a nest was built but, to our knowledge, no eggs were laid. In the spring of 1988 I found a beautiful nest with three eggs but again, because of House Sparrows, no young

were fledged. And 1989 was a repeat of 1987—a nest but no eggs. In 1990 House Sparrows were such a problem that I placed a cork in the hole of the box. For about a week the swallows begged me to let them occupy the box, but after so much work on their part year after year with seldom any reward, I felt they would do better to try establishing themselves somewhere else. The box remained corked all that season which deprived us of hearing the parents' musical chatter, seeing their industrious forays for nesting materials, watching their graceful and skillful flight in search of miniscule insects, and anticipating the day when the young would fledge. All of this we had witnessed only once—in 1986.

In 1985 Don Stiles had arrived prepared to band the resident female, but each time we opened the box she was gone. After receiving a banding permit in 1988, I attempted each year to find the female on the nest, but was never successful until this year (1991) when I banded not just one, but two females, as well as one male, all in our backyard box! To top it off, I was able to band five young before they fledged on 5 August, only our second successful nest in the 11 seasons since our first sighting in 1981.

The 1991 fledging of five young was the culmination of an unprecedented effort on behalf of our backyard Tree Swallows. It made the almost yearly bouts with House Sparrows pale by comparison. This year the fight was with a pair of their *own* species!

In my experience, Tree Swallows are not known for their dedication to defending their nest box. The reason, I believe, has to do with their need to leave the site on cloudy days and search out a large body of water over which insects gather in sufficient numbers to satisfy the birds' appetites. The parents are very much in evidence on warm, sunny days, but on cloudy days they pull a blanket of soft white feath-

ers over their eggs or newly-hatched young, and spend the day away from the nest. This habit gives House Sparrows their opportunity to make raids on the undefended box. But it wasn't the House Sparrows that caused havoc this year.

The month of May was calm enough, with a pair of Tree Swallows visiting the nest box beginning on the 11th. By the 16th the female had started her nest, and on the 26th copulation began. On 6 June I monitored the box for the first time and found the female brooding six eggs. I banded her (2021-73864). When I monitored the box on the 12th, the eggs were nowhere to be seen! To my knowledge, the few House Sparrows in the area had not been seen near the box since early May. What was going on? We began paying closer attention. We noticed that on some days there were as many as four adult swallows in the general vicinity of the box, instead of the usual two.

My last copulation entry had been 28 May. Now, between 14 and 19 June there were almost daily entries. On 21 June I spent much of the day working in the garden close to the box. At one point there was such a kicking and hollering in the box that I raced up and opened it, expecting to find a House Sparrow getting the better of the female. The noise stopped abruptly and two *Tree Swallows*, too surprised to fly out, froze momentarily. As I quickly picked up the top one, the other flew off the nest revealing five cold eggs. The one in my hand was a male, which I banded (2021-73876). I had not noticed whether or not the escapee had a band. There was almost continual fighting around the box on 22 June. None was observed the next day and, by the 24th, nest-building and copulation had begun again. On 26 June, the fighting resumed, so I monitored the box again and, for the second time, found all the eggs gone!

At this point, a suspicion finally dawned as to what must have been going on the past two weeks. I felt below the surface nesting material and discovered the five eggs I had seen 21 June, ones I initially presumed had

been carried out of the box by an intruder. On further investigation I also found the six eggs from the first clutch. I removed the eggs but, not wanting to disturb the nest more than necessary, left the nesting material as intact as possible. This, I later realized, was a mistake.

Nest-building began again the next day, 27 June. On 1 July, in monitoring the box, a new female was found brooding five eggs! She too was banded (2021-73887). After being on holiday for two weeks, we returned July 15th to find four newly-hatched young in the box! There were five on the 16th. What a thrill the remainder of the month to watch the busy parents, rain or shine, actively caring for those ravenous young. July 27th they were big enough to band (2031-62720 to 62724). Two of them had blowfly larvae on their toes, which I removed. It was then I realized my mistake in leaving the old nesting material in the box.

August 5th we woke to sunny skies and a noticeable absence of avian comings and goings. All five young had fledged, 22 days after hatching. What a happy ending! The nest box was cleaned, disinfected, and corked in readiness for next year. I hope one of the banded females will occupy the box and, maybe, we'll find out if the banded male was victor or vanquished! ■

NABS SLIDE SHOW

The NABS slide show is available for rental at \$10.00 or purchase at \$55.00. The show consists of 141 collated, cardboard-framed 35 mm slides and a printed script (no slide tray). If a cassette narration is desired add \$5.00 to the purchase price.

To rent or purchase the bluebird slide show, write to the following address: NABS Slides, Box 6295, Silver Spring, MD 20916-6295. Please allow a month for delivery and, if possible, specify several dates.

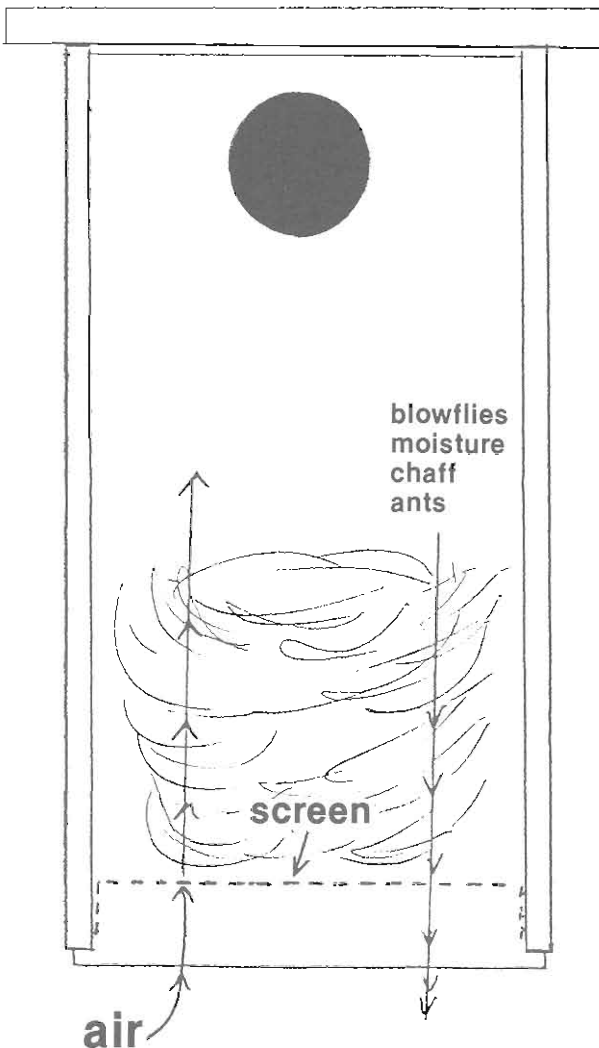
Box Designed to Beat the Heat

Eric Uebelhor

This past summer I field tested a new box design which seems to help control the parasitic blowfly and ants. Most important, it provides extra ventilation during the hot summer months, can be closed for warmth during cold spring weather, and is easy to clean after the young have fledged.

The design uses a fine mesh screen (hardware cloth) as the permanent box bottom along with a removable wooden floor beneath it. The screen is

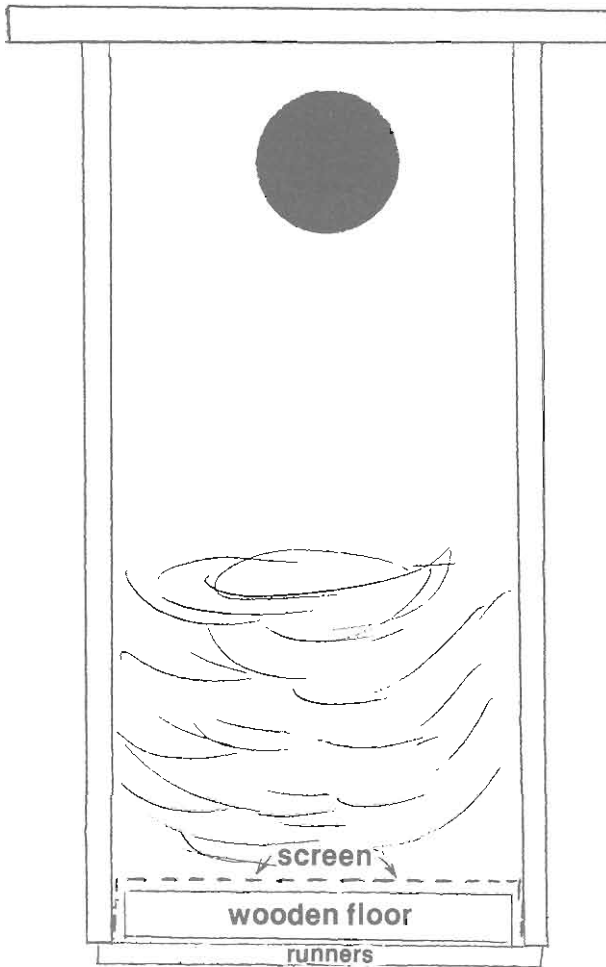
Figure 1. Nesting Box with Screen Mesh Floor



stapled to the inside of the walls. Without the wooden floor in place, it seems as though blowflies and ants have no place to start trouble for the nestling bluebirds. With the mesh floor only, cleaning the box after a brood leaves the nest is easy, since most of the chaff has fallen out during the nesting period. During the hot days of summer, the screen allows freer air circulation throughout the box than with the usual floor. On the cold days (and nights) early in the nesting season, the wooden floor is inserted on runners beneath the mesh screen to help the box stay warm. As hotter weather arrives, remove the wooden floor.

This box design came about after the summer of 1988 in which southern Indiana experienced an extended drought and oppressive heat wave. The heat index soared well above 110° F. I watched helplessly as the heat affected nestlings in nest after nest. I vowed to design a cooler box. The screen mesh floor seemed to be the answer. I put a wooden floor on runners beneath the mesh floor so in the early nesting period the cold nights would not cool the interior of the box to dangerously low levels for eggs or

Figure 2. Nesting Box with Wooden Floor Beneath Screen



Diagrams by Eric Uebelhor

nestlings. When hotter weather arrived, I removed the wooden floor after the nests were built. This seemed to be an effective way to cool the box, help control the blowfly problem, and perhaps stop ants from invading the box.

In 1990 I built just one box with the special floor. Its success was encouraging, so in 1991 I built and field tested 18 boxes with the screen mesh floors and removable wooden box bottoms. Again in 1991 southern Indiana was subjected to a severe drought and heat wave; this was even worse than that of 1988. As the heat index rose, I took out the wooden floors to help cool the young bluebirds. In 1988, I believe heat caused the loss of more than half of my nestlings. Last year conditions were worse, but my boxes were different. I fledged more than 100 bluebirds from these boxes; more important, I did not lose one nestling or one egg to heat. I am convinced that the ventilated boxes saved my bluebirds from the heat, blowflies, and ants. ■

11570S 100W
Ferdinand, IN 47532

The North American Bluebird Society continually investigates nesting boxes in a wide range of styles. Many prove to have no appreciable advantages over types in widespread use, but sometimes a design may be of value in certain climates or under particular conditions. If you use any experimental boxes, please advise Research Chairman Kevin Berner, State University of New York, College of Agriculture & Technology, Cobleskill, NY 12043.

Holden Arboretum, Mentor, Ohio 1991 Summary

The Holden Arboretum in Mentor, Ohio experienced another successful year in support of cavity nesters. For Eastern Bluebirds 331 eggs were laid, 260 hatched, 224 fledged, and 221 of the young were banded. Tree Swallow numbers are quite similar to that of bluebirds: 364 eggs laid, 301 hatched, and 236 young fledged.

A total of 2,779 bluebirds have fledged from Holden Arboretum boxes during the 26 year period marking "Project Bluebird." ■

—Paula Van Natta, Coordinator

FIFTEENTH ANNUAL MEETING OF THE NORTH AMERICAN BLUEBIRD SOCIETY

The 15th annual meeting of the North American Bluebird Society will be held in Minneapolis, Minnesota, September 11-13, 1992.

Hosts for the meeting are the Minnesota Bluebird Recovery Program and the Minnesota Department of Natural Resources Non-game Program.

The deadline for registration is August 10. Direct registration and any questions to the following address:

**1992 NABS Conference
Bluebird Recovery Program
Box 3801
Minneapolis, MN 55403**

PORTRAITS

Four cavity nesting species posed for Hubert Brandenburg. The male Red-breasted Nuthatch below, the male Red-bellied Woodpecker at the bottom of the page, and the Carolina Chickadee at the bottom of the facing page were all photographed in Hagerstown, Maryland. The Eastern Bluebird at the top of the facing page was captured on film near Sykesville in the same state.





QUESTION CORNER

Lawrence Zeleny

I have been a bluebird enthusiast only two years during which time our eight boxes have fledged 63 birds (all bluebirds).

When I inquired of NABS what to do about House Sparrows, I was told to trap them, and when I asked what to do with the trapped birds, the answer was "kill them."

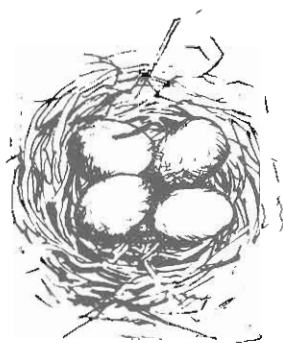
Aren't we all part of an international society to protect and save all wildlife?

Annie Hendricks
Ft. Belvoir, Virginia

In your recent letter you asked, quite logically, why an organization devoted to the preservation of wildlife should sanction the destruction of any species of wildlife such as the House Sparrow (*Passer domesticus*).

The House Sparrow, formerly known as the English Sparrow, is not a native American bird. It was introduced into this country from Europe near the middle of the last century and very rapidly spread to most parts of the country where it has become one of our most abundant birds. These birds will build their nests in a great many different kinds of locations but have a strong preference for enclosures of some sort such as cavities in dead trees or in nesting boxes provided for native birds such as bluebirds.

House Sparrows are far more aggressive than bluebirds and will almost always win in any competition between the two species for a nesting site. If bluebirds are already established in a nesting box or cavity, the sparrows will usually drive them out and destroy the bluebird eggs or nestlings. A brooding female bluebird will commonly be killed by a sparrow, often having her eyes plucked out in the process. If the male bluebird tries to inter-



fere, he too will very likely meet the same fate.

Since House Sparrows are not native American birds, they are not protected by law and seemingly harsh treatment may often be necessary to protect bluebirds and other native birds from them.

Efforts have been made to devise a nesting box acceptable to bluebirds but not to House Sparrows, but so far these efforts have had very limited success. ■

Bermuda Bluebird Coin Released

The Bermuda Monetary Authority, paying tribute to Bermuda's natural history, has released coins featuring the Eastern Bluebird. The uncirculated ten dollar gold coin will sell for \$75.00. The two dollar silver proof coin will sell for \$40.00. Anyone interested in purchasing these coins can do so through the Bermuda Bluebird Society, P.O. Box HS23, Harrington Sound, Bermuda, HSBX.

Cecil County Bluebird Capital

Rising Sun, Maryland was declared the Bluebird Capital of Cecil County when Mayor Catherine Lane signed a proclamation in April 1990. Gerald Newman, an active bluebirder in the area for more than ten years, approached the town council with the request.

The High Road Continues

Robert A. Stevenson

"I'll Take the High Road" in the Autumn 1991 issue of Sialia (13(4):135-136) related Stevenson's problems with a bear which damaged feeders and bluebird nest boxes near his home in northeastern Minnesota. The conflict continues. Here the author takes us to the time of hibernation.

The end of October is near. It snowed about an inch last night which should send an extra salient message to my "Buddy Bear." Nature has been crooning an increasingly urgent lullaby for some time now—the bear probably has his boudoir prepared for five or six months of serious R & R. Meanwhile

that great body of his has created an insatiable appetite so that he visits my backyard at shorter and shorter intervals.

Last week I had the misfortune of spending a few days in the hospital. Upon returning home, Buddy had completed his mission for this year—talk



Foreground shows 8 inch wooden pole broken off by bear and feeders in various states of destruction. Note claw marks on remaining crosspieces on metal pole.

about post-operative blues! Not a single bird feeder remained. Score to date: 31 feeders and 7 bluebird boxes.

I studied the disaster area for a few minutes and then began to see the humor of it all; a smile works wonders. Only a few short months ago I had classified him SLBP (Slow Learner, Behavior Problem). If that is true, what does it say for my intelligence? I apologized to him mentally (although he did take two more ammonia baits). I think he now has several credits toward his M.D. (Master of Destruction). He seems to be majoring in bird feeders with a minor in bluebird boxes.

I no longer view him as a candidate for the gallows. He has, in fact,

established a warm (if not loving) place in my heart. Bear hunters stop in regularly, having heard of his exploits. I lie with a straight face, "Sorry, he hasn't been around for weeks." A professional bear hunter offered to "take him out," but I said, "No, thank you." Guess I'm just an old softie. Buddy is just satisfying one of life's most basic needs: food. What was originally a deadly game for me has become an all-consuming challenge: I must outwit this bear!

A *Sialia* reader suggested I use an electric fence. I used a four wire electric fence for many years to keep the deer from devouring my garden. I hesitate, however, to use it on a bear. Bears



Destruction of remaining feeders on pole at right. New pole erected on left with lowest crosspiece at 10 feet. Step ladder shown is 6 feet high.

can be extremely short-tempered and vindictive. I recall an incident involving a neighbor many years ago. He had an electric fence to control his cattle in a pasture. One night a bear made contact with the fence and became enraged. He proceeded to tear up the fence posts and wire for a quarter of a mile. That bear knew what caused the pain and proceeded to wreak revenge. I agree that such a fence will control docile animals, but look out when you irk a bear.

During his most recent visit, Buddy figured out a new method of taking down feeders. The last feeder sat on the ground unscathed but with the lid open, as though it had been removed with a screwdriver. Apparently he shook the pole so violently (1 1/4 in. pipe in concrete) that the screws let go. The pole now lists at about a 10° angle. I can almost hear him growling under his breath, "Vini, Vidi, Vici." Hmmmm, I still have a 20 foot piece of 6 inch well casing....

Ah, but like a phoenix, there arises a new challenge for him: a 2 inch pipe in concrete with the first crossbars 10 feet from the ground; the top feeder is at 14 feet; the capacity is 15 feeders. There is only one problem. At 73 years of age, how will I fill them? I can just

imagine Buddy looking over my shoulder and chuckling, "What are you gonna do, grow wings?" Not quite. I blew \$250.00 for a 12 foot aluminum step ladder so that I could fill the feeders. It works great and the birds are worth it. I have hundreds of Black-capped Chickadees, both Red-breasted and White-breasted Nuthatches, Downy and Hairy Woodpeckers, Blue and Gray Jays, and (my pride and joy) 25-30 Pine Grosbeaks. There is a red squirrel ensconced in one feeder. He climbs the pipe as though it were wood. I haven't been able to put up a squirrel guard yet. The bear ruined the other one.

Sleep tight, big fella, you have declared a timeout, but we have a date for next spring. ■

11043 Willow River Rd.
Ghaen, MN 55740

Ed. note: Bob Stevenson refers to living "in the wilderness," which presents some unusual problems. In addition to his running battle with the bear, one of his letters mentioned another predator which he described this way: "A few years ago on our very first nest of bluebirds a Great Gray Owl took both parents. We pinned the crime on the owl because we saw him sitting in a tree near the box—he still had blue feathers on his talons as revealed through a 20x spotting scope."

BLUEBIRD JOURNAL

Spring 1989

Rachel A. Williams

For several years I lived in Whiting, New Jersey (Ocean County) in what is called the Pine Barrens. I quickly found some nature lovers among the people of that area and became part of a small group who were trying to help bluebirds return to our "neck of the woods." With the help of Ocean Nature and Conservation Society in Tom's River and a man named Don Sutherland, we worked as a team to encourage the influx of bluebirds. That first year I took two boxes. This is the story of my very first experience with those gorgeous and elusive creatures: Eastern Bluebirds.

March

19—My husband, Roger, spotted a male bluebird on the fence of the neighbor's property in the a.m. I saw a female bluebird on the top of box 1 and then on the telephone lines by the box around 4:00 p.m.

May

- 2— As I drove down the driveway this afternoon, a male bluebird flew across in front of the car and sat on box 1, eventually going in and out of it. When I returned around 3:35 p.m., I took the field glasses, planted myself in a comfortable position at the foot of a tree, and watched. I immediately saw the male on the telephone wire preening in the sun. What a *gorgeous* sight! The female eventually flew into the area and for the next half hour I watched as the two of them flew around together though only the female went in and out of the box with grass in her beak. The male tended to sit on the wire or on the top of the box like a sentinel. He offered no help in the nesting process, as far as I could detect.

After supper I invited a friend to see if the birds were still here. Both of them flew to the box and then up to the telephone wires as though they wanted to provide as good a view as possible. I am so EXCITED! I am not going to check on the nest for a while, at least not while they are showing nest building activity. Box 2 is empty. This all seems like a dream. I feel as though I have waited so long! My dear friend, Lois Morris, has reminded me that we have all summer to watch for bluebirds, but I have been so eager since March, when we saw the first pair, that it has been difficult for me to be patient.

- 3— 7:00 a.m. From my front picture window, I can see *much* activity this morning. Mother bluebird darts in and out of the box. I must take some time to enjoy her and her process of nest building today. Perhaps I'll call another friend and see if she wants to come over and watch, too.

3:45 p.m. Lois and Dottie stopped over and MADE ME check the box to see if, indeed, there was a nest so that they could report to our "fearless Bluebird Project leader," Don Sutherland, tonight at Ocean Nature and Conservation Society meeting. Was there *ever* a nest. Four and a half inches of grass with a deep hole in the center. No eggs at this point. I plan to check every other day now to watch for eggs. Hurrah! I taste success. This is fun!

- 5— Checked the box for eggs around 9:00 a.m. Nothing yet.

- 7— Checked box 1 for eggs around 4:00 p.m.—**TWO BEAUTIFUL SOFT BLUE EGGS!** First one obviously was laid on the 6th so I can count from then. (Nothing in box 2.)

- 9— Checked for eggs around 2:00 p.m. with Mary Westra. **Two more** eggs for a total of 4 so far. Lois suggests that there may be as many as 6 though 5 is most normal. Goodness! Out of such a little bird. I was so excited about the eggs that I closed the box up immediately after seeing the new eggs until I heard Mary's soft voice saying, "*Could I see, too?*" Did I really do that? I was so embarrassed.

- 11— Checked box 1 after school with my two daughters. At last we have a full complement of 5 beautiful blue eggs. We spooked poor Momma bluebird when we got about 3 feet from the nest! "*Sorry, Mrs. Bluebird!*"

- 14— "*Happy Mother's Day, Mrs. Bluebird.*" Checked the eggs around 4:00 p.m. so that Rog could have the chance to see the eggs, too. I knocked on the box and when nothing happened I began unscrewing the side, only to be surprised when Mother flew out! Hope I didn't make her mad. I may call Don soon to ask what I should be looking for from this point on and the timing of it all. (Talked to my Mom in northern Minnesota today and she said that there are three pairs of

bluebirds that she sees every day when she goes out for her walks. Maybe in a few years we'll have that many here.)

- 16—Checked box around 4:00 p.m. I knocked several times but nothing—when I slowly opened the box, there sat Mrs. Bluebird, looking at me with her beautiful little black eyes. I decided to leave her alone and not scare her any more than necessary. I was really only concerned that she was all right and taking care of the eggs, anyway. I'm waiting to find out from Don via Lois what I should be looking for these days.

Dottie called me and told me that 13-15 days after the last egg is laid the babies should hatch. Babies should be banded when they are 9-10 days old. They will fledge around 17 days after hatching. So...

Hatching: The 22nd through the 24th of May

Banding: Around the 1st of June

Fledging: Around the 8th or 9th of June

- 18—Checked box 1: No Momma today, but still 5 eggs. It's been HOT so perhaps the eggs don't need to be "sat upon" all day long. Guess I won't worry at this point. I did see Daddy bluebird flying around. (Nothing in box 2.)

- 20—Checked today. Momma flew out when I knocked. The eggs look unchanged. We should be within a couple of days of hatching. I can hardly wait but I am slightly nervous, too, about the side-opening box as the babies get big. Will they fall out as I open it? I'll need to be careful.

- 22—(13th day of incubation.) Checked box around 10:45 a.m. Momma flew out when I knocked. Still 5 eggs. I'm eager to see them hatch!

- 24—Checked box around 4:00 p.m. when the girls got home from school thinking that since this was the 15th day of incubation the birdies should be hatched. Alas! Still 5 pretty little blue eggs staring me in the face. No Momma to scare out today. Called Lois worried that "*Mom was ignoring her kids!*" She suggested that I check them every day from this point on to keep track of the situation and if they don't hatch soon (couple of days) to call Don.

Dottie called later this evening to tell me that they have 5 babies in one of the other boxes that our bluebird group has put up in the Berkeley Township Landfill—they hatched on the 18th day—so not to panic!

- 25—(16th day of incubation.) Another friend and bluebird enthusiast, Karen Richardson and her kids came over at 12:30 p.m. to drop my daughter, Joy, off for the bus so we all checked the box together. *Four of the five eggs have hatched.* I closed the box up as quickly as I could after all 4 children could see. There was a cool breeze today and with those little birdie's bodies so free from feathers I thought it best to try to keep them warm. Joy said that when she walked home from the bus she saw the momma going into the box. She's probably starting to feed them. I am dying to tell Lois and Dottie, but neither of them is home. I wonder if I should leave the birds alone now for several days until they all get stronger. But how will I know if that 5th egg hatches?

- 26—(2nd day after hatching.) Checked the box at 11:15 a.m. ALL EGGS HATCHED. Yeah! I watched for a little while through the glasses as Mom and Dad flew back and forth feeding the little things. Now I'll start checking them every other day instead.

- 28—(4th day after hatching.) Checked the box early afternoon. All the birds were

tucked together in a ball. Because I couldn't even see one head or mouth, I am slightly nervous that they aren't getting fed well. I opened up the box as far as it could go to make sure they were alive, and I could see their little bodies going up and down in steady breathing. I'll check with Lois when I see her tomorrow since I don't know what baby birds are supposed to look like at 4 days of age. They still are very free of feathers.

- 30—(6th day after hatching.) Checked the box around 11:00 a.m. The babies look so much bigger today and even have a good deal of down on them now. The change in two days is nothing short of phenomenal. Lois said that this Thursday, June 1st, our birds will be banded around 5:30 p.m. Hope it doesn't matter that my brood will only be 8 days old rather than the regular 9-10 days when they usually band them. Guess I'll let Don worry about that!
- 31—(7th day after hatching.) Lois (half in jest, I think) suggested that I mow a path to my box for tomorrow evening's banding. I'm crazy, I know, but I did just that! The grass is so long that I first found a weed-whacker and whacked the tall grass down up to the box. When I got to it I could hear the babies making little noises. Finally mowed the path and a circle around the box so that lots of people could get close. It's supposed to rain tomorrow but, rain or shine, we're on, I guess. Hope it's at least dry so that I can get some pictures. After all, these **are** my first "babies!"

June

- 1— Today dawned hot and humid. Rather like stepping out into a sauna. Around 5:30 p.m. the "Whiting contingency" began trickling up our driveway, cameras and binoculars in hand. It was fun to meet some new bluebird lovers that I had never met before. The neighbors came over, too, as well as some friends from Absecon who were visiting friends in the area. In that first group there were 7 children. The rest of the group that had been at the Berkley landfill came around 5:50 p.m. with the retired conservation officer who would be banding my babies. Lois is thrilled with my mowed boulevard. I put Lois and Karen in charge of getting the babies out of the box for Tom to band because I really wanted to take pictures. Tom was surprised at how small my birds were and suggested they might not be being fed enough, but after turning them over to check their tummies said they were getting plenty to eat. My girls saw him do that and told me later that their tummies were so full that they looked like they each had golf balls inside. Tom guessed they were 6 days old when they are actually 8 days old (with the exception of the one that hatched a day late which would make it 7 days old). He was a little leery of banding them at this size as their legs are so much larger now but went ahead and did it. My daughters, Sara and Joy, got to hold baby birds but there weren't enough to go around for all 7 children—a fact that left Karen's Amy in tears! Rog took a video of the proceedings but with 20 people it was nothing short of a miracle that he was able to get anything more than heads and backsides.

Now I shall be eager to see how my babies grow in this next week and if they fledge near the proper time (around the 8th or 9th of June, according to my records.) I have a hunch it will take a few days longer than normal because of their present size.

After tonight the neighbors offered their large yard for some boxes, too. How nice to see them get interested as well. Glad I thought to suggest they come watch the banding tonight.



Karen Richardson's children holding banded nestling bluebirds.

-
- 3— Checked the babies on the way to town this morning (around 9:30 a.m.). No parental activity at all and the babies look *very lethargic*. Could they have been “sleeping in” after a rather traumatic banding process several days ago? I guess I won't worry about them, but at the same time, I do worry. They did look bigger to me.
 - 4— Early this afternoon I stopped by the box to just listen—no sounds except an occasional scratching sound like the babies were adjusting positions.
 - 5— (12th day past hatching.) On the way to pick strawberries this morning, Joy and I stopped by the bluebird box and checked them; many more feathers but they are still quite lethargic. Wish I knew what they were *supposed* to look like. They are definitely growing.
 - 7— (14th day after hatching.) It's a wet, “drecht” day, as the Scots would say. Joy and I sloshed our way out to box 1. Good thing I mowed again on Monday. The birds all look very healthy today though still not lively. Their wing feathers are beginning to come in and the bird that was closest to the side of the box I opened even had a bluish tint. Talked to Lois when she stopped over last night. She has agreed to check on the boxes while we are gone provided I mow another path to box 2 as well. See what I've gotten myself into? By then all the birds should have fledged, but I want to make sure that other birds don't start building in the box if Mr. and Mrs. Bluebird want to stick around and build another nest. I must ask if juveniles wait another season before building nests.
 - 9— Had an old friend visit from South Carolina. Of course, I had to show off my babies. It was a first for her.

13—The girls wanted to see the birds today, so we enjoyed them together. They are BIG!

14—They're GONE! All the babes are gone. And I didn't get to see even one of them fly. Oh well. There will probably be other broods to watch, but these were my first. Nothing I can do about it now. It's just a good feeling to know that they made it. This has been a wonderful experience, not only for me personally, but also for my family and many of my friends. What a marvelous thing it is to watch the miracle of creation and growth in nature. ■

1602 Burlington Dr.
Hickory Corners, MI 49060

Built-in Babysitter? Immature Bluebird Assists Parents at the Nest

Michele Renaud and Steven Stoddard

While doing research on the Eastern Bluebird (*Sialia sialis*) for two of our professors, Ernie Szuch and Dr. Gary Pace, at the University of Michigan-Flint a few summers ago, we observed an immature bluebird helping the parents feed and remove fecal sacs of the hatchlings.

It was our responsibility to observe certain bird boxes that were occupied by bluebirds. We had 34 boxes in all, but only a few contained bluebird nests. As the birds hatched, we were to record their weight and approximate age. Just before the birds were to fledge (at about 17 or 18 days) we placed bands on the birds' legs and recorded the number and color of the bands.

Observation of the nest was done with a spotting scope and binoculars. We had the opportunity to be close enough to one nest to set up a camera and photograph the birds' nesting behavior.

One day while observing the nest box we noticed a grayish bird flying in and out of the box. We had observed kingbirds and sparrows harassing the bluebirds earlier in the season, but

never one entering the nest box. Upon closer inspection of this bird, we saw a pink band on its leg. Pink was the colorband we were using this year to identify the immature bluebirds. We consulted *A Field Guide to the Birds* by Roger T. Peterson and concluded that this was an immature bluebird, aiding the parents with this clutch of birds.

At times the immature bird not only helped to feed the nestlings, but it also took on a role in watching over the nest. It would perch atop the nest box, possibly mimicking the male bluebird's behavior. The juvenile also assumed a "babysitting" role in the care of the hatchlings. It would often remain in the nest box with the young while both parents searched for food. The immature bird also acted as a "housekeeper" by removing fecal sacs from the nest box.

All five hatchlings fledged. Whether the immature bird's assistance was a major factor in the clutch's survival is uncertain, but such seemingly altruistic behavior was exciting to observe. ■

2707 Reynolds Ct., Columbiaville, MI 48421
(Renaud); 13240 Golden Cir., Fenton, MI 48430 (Stoddard).

Speakers Bureau Report: Ontario

Ron Kingston

Bernie VanDenBelt, Lorne Smith, William Read, and Gord Kingsmill

The province of Ontario, Canada has many speakers spreading bluebird news. The four described give generously of their time.

Bernie VanDenBelt in Lambeth near London uses the NABS slides plus a few of his own to educate children at a nearby school about the importance of helping bluebirds and other native cavity nesters. He also presents programs on county nesting birds.

Near the Georgian Bay and Lake Huron Lorne Smith presents programs to elementary and secondary schools, garden clubs, churches, and the Salvation Army. He uses sample cutaway nest boxes which contain nests of the Eastern Bluebird, Tree Swallow, House Wren, and Black-capped Chickadee for comparison. He has appeared on television and radio spreading the word on cavity nesters. He states: "The idea of a lecture and workshop seems to be getting a good response in this area."

NABS board member William Read, of Kitchener, established the

Ontario Bluebird Society in 1988. He says that they have more than 250 members and issue a newsletter each spring and fall. The group sends out a nest box survey form each year. Their objectives are to increase the number of bluebird nest boxes, coordinate the nest box trails in Ontario, and monitor population trends of Eastern Bluebirds from year to year by surveying the number of successful fledgings.

Near Toronto Gord Kingsmill gives slide programs and trail walks at the Pine River Outdoor Education Center. He also helps the students of York learn about bluebirds with examples of nest boxes. The board of education for the city of York has as its motto, "learning for life," which undoubtedly will enrich the lives of the students as well as help the plight of the Ontario bluebirds.

Ontario is very lucky to have these excellent speakers. Thanks to their efforts many people are seeing bluebirds for the first time—an experience they will never forget. ■

BLUEBIRD BOOSTERS

Appearing on the inside back cover is a list of those individuals who have made a financial commitment to bluebirds and 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 20916-6295.

Adopt-a-Highway in Texas

On Saturday, 4 April 1992, Harry Krueger of Ore City, along with nine other volunteers, participated in the annual Texas Trash-Off. These individuals maintain a 2.4 mile section of FR 726 (highway) in the name of the North American Bluebird Society. Volunteers, who ranged in age from teenagers to senior citizens, removed 18 large bags of trash. Fifteen bluebird nest boxes are mounted and monitored along that segment of farm road.



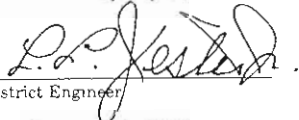
Adopt-a-Highway Award

The State Department of Highways
and Public Transportation

presents this award of merit to

North American Bluebird Society

for outstanding service in helping the department
maintain the beauty of Texas roadsides through
participation in the Adopt-a-Highway Antilitter Program
over a period from 1/1/90 to 12/31/91.


District Engineer

January 1, 1992

Date

Feeding Time—Eastern Bluebirds

Albert A. Drollett of Weymouth, Massachusetts earned an Honor Award, Film Category, in the 1991 Kodak International Newspaper Snapshot Awards (KINSA) contest with this picture. The color photograph captioned, "Feeding Time—Eastern Bluebirds," will be on display until 6 December 1992 at the *Journey Into Imagination* pavilion at Epcot Center, Orlando, Florida.



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:

Enclosed is an article from the *Charlotte Observer* (Charlotte, NC) pointing out that the 50 or 60 million cats in the nation may be killing hundreds of millions of birds each year. This is in addition to the problems birds already have from declining nesting and wintering habitat, pesticides, and herbicides.

The article points out the loss of birds, but the only solutions offered are to keep pets inside or keep them on leashes outside which is not acceptable to the public. As you know, there are now more cats than dogs.

I'll keep on trying to improve the number of bluebirds.

David G. Richards
8623 Bee Tree Circle
Charlotte, NC 28270

Eds. note: Even well-fed cats kill birds. Do not let your cat roam outdoors without a collar to which several small bells are attached. The best solution, of course, is to keep cats inside the house.

Dear Editor:

I enjoy reading *Sialia*. The bluebird is my favorite bird. I have 12 bluebird boxes that I monitor on our farm. I hope to see the Eastern Bluebird become more numerous in our area.

Joseph P. Gehman
Route 6, Box 855
Lebanon, PA 17042



Dear Editor:

This winter the members of the Blomidon Naturalists Society, the largest Canadian naturalists group east of Montreal, were excited to learn that six Eastern Bluebirds had been identified in the local Christmas Bird Count on 21 December 1991. Subsequently, two more were identified in the same area. They are staying in the area of a small pond whose owner chops a hole in the ice for them every day; they are eating the hips of wild white roses. Bluebirds were also found in other areas of Nova Scotia during the count period.

As co-editor of the Blomidon Naturalists Newsletter, I want to encourage local naturalists to assist the reestablishment of the Eastern Bluebird by publishing nest box plans and other information in our newsletter. Although Nova Scotia historically has been at the limit of the breeding range for the Eastern Bluebird, other birds, such as the Mourning Dove, have recently established themselves here. Perhaps the Eastern Bluebird could be next.

Margaret R. Alliston
R.R. 3, 174 West Brooklyn Road
Wolfville, Nova Scotia
Canada BOP 1X0

Dear Editor:

The following is a note about one individual's experiences with Harry Krueger's net snake trap, *Sialia* 13(2): 63-67.

I made two traps and must admit didn't do a very good job of it. Both were placed on metal posts just below the bluebird box (about 3 1/2-4 ft. off the ground). No. 1 Box: Situated in a low place near a gully that carries casual water—a good haven for snakes. We had lost birds to snakes at this site in the past. After using the net trap we hatched a full clutch of birds and I attribute the success to the trap.

No. 2 Box: This box has hatched at least two clutches per year in the past, but this year we lost four out of five nestlings to snakes even with the trap in place. However, the trap was poorly made; wind had whipped it around and I let the weeds get higher than usual around the base of the pipe. I do not feel the trap failed; rather, I blame myself.

To date I have made and distributed about 2,000 bluebird boxes. Most are sold at \$5.00 each to raise money for an old cemetery here where the family of Col. William B. Travis is buried.

Wayne Hesterly
P.O. Box 129
Chappell Hill, TX 77426

The following letter was received by Dr. Zeleny:

I have written you as a gesture of thanks for all you have done to preserve the bluebirds of America. My father, William E. Brown, is a charter member of NABS, joining in 1978. We have thrilled over every single issue ever received of *Sialia* and always share it with interested friends. What amazes me is the fact that so many people with only slight ornithological knowledge have taken such a stand to save our bluebirds. Though we haven't noticed a decline and, in fact, see an increase within our boxes, bluebirds are among our very favorite feathered friends and always brighten our yard here in the warm coastal plain.

Please read this as a thank you at this crucial point in the progression of our planet's very existence. It's a comforting thought to know that one man's crusade has helped to advance life

here on Earth.

Brian Brown
Route 2, Box 670
Pine Needle Road
Fitzgerald, GA 31750

Dear Editor:

Mountain Bluebird Trails is very pleased with our excellent fledge for 1991—over 2,400 more than last year and 1,387 more than our best previous fledge in 1988. Cold wet days took quite a toll of our nestlings at the end of May; 436 were lost, mostly one to two days from fledging. Some nests of eggs were also lost but we actually had very few sterile eggs. The total number of bluebirds fledged was 6,289 of which 4,008 were banded. The boxes available this year were 3,007. We are grateful that the trail operation was again funded by Canadian Wildlife Foundation, the Recreation, Parks, and Wildlife Foundation, and Fish and Wildlife. This is Mountain Bluebird Trails' twelfth annual report.

Duncan J. Mackintosh
1831 20th Ave. South
Lethbridge, Alberta
Canada T1K 1G3

Pequenakonck Elementary School Bluebird Project

Raymond Bassi, fifth grade teacher at Pequenakonck Elementary School, North Salem, New York continues to be actively involved with bluebird conservation. For the past eight years, erecting bluebird nest boxes on the school grounds has been a regular event in his class.

This year former student Scott Dupree and his father constructed the dozen boxes which were erected in March. This brings to 26 the total number of boxes surrounding the school. Since 1984 the classes have observed a gradual return of bluebirds. Bassi also presents bluebird information to kindergartners once a year. He says he wants to make sure these young students know they are the ones who will "inherit the earth." ■

Bluebird Tales

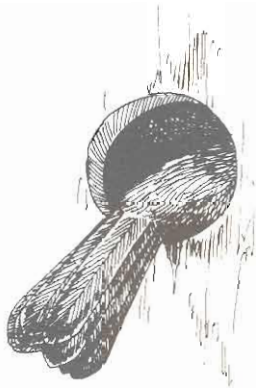
Mary D. Janetatos

While staring intently at a viburnum shrub across the yard, I thought I imagined a russet-breasted bird on a branch. A flash of blue swooping down from the roof of the house and landing on the nest box turned out to be the male bluebird. The "phantom" bird-in-the-bush joined him with her beak full of nesting material. At last, my very own glimpse of the bluebird pair which had been reported by the NABS staff—**Sara Funkhauser** and **Chuck Dupree**. I was reminded of a phone message from **Susan Stathes** of Etters in southern PA, who said that as a child she had often watched birds, but to turn her into an avid bluebird "all it took was to see *one* bluebird." Last spring she put up 10 boxes at the DuPont facility in Etters which hosted some Tree Swallows. This year she has high hopes, both for bluebirds and for interesting her co-workers in the project. Also reported from Pennsylvania were the results achieved by **Anthony** and **Christine Jantask** of Saegertown who watched 145 bluebirds hatch out as they became "avid propagators" of bluebirds.

Family members get involved as reported by **Don McClaugherty**, the father and scoutmaster of Eagle Scout **Scott R. Muse** of Tyler, TX: "Scott is doing an Eagle Scout project involving the building of 26 bluebird houses and placing them on trails at two elementary schools and one middle school. He will train the teachers and students on how to maintain and monitor the trails. Six of the bluebird houses will be placed at the Tyler Management and Research Station of the Texas Parks and Wildlife Department. These will be maintained and monitored by the Station's staff."

Sarah Johnson of Guilford, CT wanted her parents, **Mark** and **Sally Johnson** of Cornwall, CT, to receive a gift subscription to *Sialia*. She wrote, "I found your address in a laundromat, of all places. Immediately I borrowed a pen and paper and decided to write to you." Here's hoping the travelling-through bluebirds find homes in CT!

Betty R. Goza of Lilburn, GA (publicity chair of the newly formed Bluebirds Over Georgia) reported, "I built and put up over 40 bluebird boxes last year at Knight Elementary, Arcade Elementary, Mountain Park, Henderson Park, and Lilburn City Park, and at friends'. I plan to put two up at



King's Spring, my mom's nursing home soon."

Sometimes a family relocates and they become introduced to the delights of observing bluebirds. Back in the winter, **Jason L. Semones** wrote from Etowah, NC: "My wife and I recently moved from Dallas, TX to western North Carolina. Since the move, we have been aware of several Eastern Bluebirds that have been using an old nesting box to roost in during cold (below freezing) weather. A neighbor told us this was not unusual and gave us a copy of your Autumn 1987 quarterly journal that contained an article describing what we observed."

A very unusual item came from **Charlotte Smith**, as she renewed and sent snapshots of the July 1991 flower show of the Elmhurst Garden Club as well as a window display in October at the Elmhurst Public Library. "We were thrilled to hear that one of the club members saw some bluebirds near her home *in the city*. (Emphasis added to Charlotte's report.) **Nancy M. Albert** of Somers, NY, sent the membership renewal for the Heritage Hills Bluebird Boosters, saying that the price of membership came out of proceeds from the sale of bluebird houses. The subscription to *Sialia* was to be sent to **Walter M. Little**, because "Walter is taking over as chairman of the Bluebird Boosters. We seem to have a thriving population of bluebirds although we have stopped building houses as construction has temporarily ceased at Heritage Hills and we have no more free scrap lumber. Interest and education never stop."

Bill and **Kathi McKinley** of Owasso, OK wrote, "We've wanted to write for some time now. I am a bluebird lover! I first got interested when I looked out one day while sitting in my kitchen and a bluebird landed on my car mirror. It came everyday on a regular basis. I started putting mealworms out. We put boxes up and, from that mo-

ment on, our bluebird story started. We have added a special feeder and stock it with mealworms and crickets. In the short three years we have been involved, we notice bluebirds are everywhere. I whistle when I go out to put mealworms out and the little bluebirds come. People can't believe I have trained my birds!"

Some groups are not able to renew but report continuing involvement with bluebirds. Such a case is Seneca Rocks Audubon Society of Summerville, PA. **Fran Williams** wrote on their behalf: "Thank you for the good work you are doing. We will not be renewing at this time. Our chapter has sort of launched our own program to help the bluebirds. We have a yearly workshop or two to build houses. We've been placing them at wetlands projects, golf courses, in Allegheny National Forest and United States Steel's property in Pittsburgh. This year we managed to build 200 boxes. Your work over the years provided the motivation and impetus. Thanks again!"

A letter was written on March 23, 1992 by **Wayne Dveal** of Saskatoon, Saskatchewan, proprietor of Bookworm's Den Ltd. "I thought you might be interested to know that I've built 30 bluebird houses and have them located on the outer fence of our 80 acres. Also, I'll be putting up another 10 on the south side of our 160 acres. The local bluebird organization is giving me houses to put up." Could that be **Duncan Mackintosh's** Mountain Bluebird Trails group he refers to?

Diane Oberlander of McKean, PA found NABS' address in a book on bluebirds she purchased.

Joseph Kujanik is retired and in April wrote, "I made 27 bluebird houses last year and so far six houses this year and gave them out. I believe that I am succeeding in getting the company where I worked for 38 years interested in promoting some of their efforts in the survival of the bluebird. There are over 5000 employees in this large utility company plus quite a few retirees. The next month's publication should have quite a spread about my involvement in making bird houses."

Robert L. Stowe of Corry, PA sent a note describing a different kind of problem. "A couple of years ago we had a rather unhappy experience with one of 'our' bluebirds. One morning I looked into the backyard and saw a male lying in the driveway. On closer inspection it became evident that he had been dead for some time. The local Audubon chapter suggested that the death might have been caused by some neighbor's lawn treatment. The Pennsylvania

Game Commission sent an agent to my house to examine and take possession of the body. The agent also suggested that it had probably been poisoned by some chemical.

"At that time many of our neighbors were using the services of Chem-Lawn. Since we plan to remain in this area for some time, it was necessary to avoid pointing fingers of accusation at people. Instead, I offered to donate a bluebird box to any neighbor who would discontinue the lawn service. Much to our surprise, all but one of our neighbors agreed and one of them had his own family of bluebirds last year."

Catherine Cole of Metropolis, IL wrote, "I'm 12 years old and enjoy watching birds. I realize that many bluebirds are losing their homes to shopping malls and I would like to help."

Other youngsters are reported to be enthusiastic bluebirders according to **Susan Spelman** of Canaan, NY. "I have been an avid bluebirder for only a few years, but it has brought me a tremendous amount of joy. My son's fourth grade class is presently in the process of setting up a bluebird trail around our school."

Writing from what sounds like a town of great bluebird habitat (Crab Orchard, KY), **Theo Nantz, Jr.**, said, "I've built bluebird boxes for over 20 years. I have around 200 boxes up and I build from 20 to 50 a year for replacements and to give away."

Friends tried and true updated NABS on their latest doings. Among these were **Don Yockey** of Wamego, KS, who said, "Thanks for a great publication. By the way, in case you're interested, I just finished bluebird house number 3336. No, I don't sell them. I give them away."

Then there was a report from **Don Yoder** of Walnut Creek, CA. "Thank you for the lead on **Eric Remington**. I called Mr. Remington and had a nice chat with him. He is manager of a sizable ranch on Mt. Hamilton where he says there are a lot of Western Bluebirds. He has been interested in birds and animals on the property for a long time; the owner told him or suggested that he buy some boxes—hence, I guess, your order. He also expressed an interest in other varieties so I mentioned to him the Minnesota Recovery Program and their *Woodworking for Wildlife* book."

Gerald Hartley of New Brockton, AL sent a note of thanks for the plaque he received at the 14th annual meeting in Bermuda. He reported that in February, "We have bluebirds nesting already this season; more and more we are having them nest in

the urban areas near here."

Arne T. Filfield of Aiken, SC decided to start his bluebird presentations with a poem about bluebirds. This was a good time to recommend "Saga of the Bluebirds" by **Katharine Braun**. Arne also put out bluebird nest boxes around edges of the playing fields at Aiken Preparatory School and reports an enthusiastic reception by the headmaster and science teacher. He plans a talk for the children complete with instructions on monitoring, an idea he got from an article in *Sialia*.

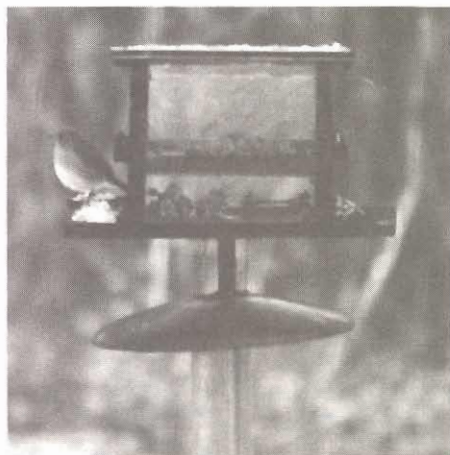
Among the surprises in the mail were these: **Cindy Mason** of Lake City, PA wrote, "My husband and I recently found an old *Parade* article (1979) about bluebirds and your society. We are writing to see if you still exist and how we can obtain more information." **Harriett E. Maxant** of Ayer, MA added this note to her membership application: "I knew T.E. Musselman in 1931." **T.E. Musselman** is credited with "Inventing" bluebird trails in the 1930s and was the subject of a cover story for a very early issue of *Sialia* (volume 1, number 3)! But by far the biggest surprise was the question asked by writer **Gabriela Bahlicki**, "Why is just a bluebird called the bird of happiness?" After explaining that she had received a crystal bluebird as a gift, she said that she had undertaken research on the bluebird and concluded that "I would be happy to see and hear it!" I glanced at the return address and realized it would be difficult for her because the address read Tel Aviv, Israel! Or would we want to say, "Next year bluebirds in Jerusalem!" ■

Myrna Pearman Wins Alberta Award

Myrna Dawn Pearman, a charter member of the North American Bluebird Society and a former member of the board of directors, was named the 1991 recipient of the Loran L. Goulden Award for outstanding contributions to natural history in Alberta. She was the seventeenth recipient of the award which was instituted by the Edmonton Natural History Club in honor of a former president who died in a plane crash at the age of 27. The Goulden Award is presented by the Federation of Alberta Naturalists. Myrna was nominated for the award by the Red Deer River Naturalists.

Myrna has served the Red Deer River Naturalists in numerous capacities including director, president, count coordinator, and participant in Breeding Bird Surveys and the Alberta Breeding Bird Atlas Project. For five years she has been the biologist at Ellis Bird Farm Ltd, an organization dedicated to the welfare of native cavity nesting birds. In addition to monitoring and maintaining records on the 650 nest boxes on the Farm, she bands hundreds of nestlings each year. In cooperation with educators in the province, she has developed a presentation about habitat preservation and cavity nesting bird conservation which has enabled her to personally reach 4,500 students in the past four years. She has authored *Winter Bird Feeding—An Alberta Guide* and *Backyards for Wildlife*.

Myrna also recently received a citation from the Roger Tory Peterson Institute of Natural History in Jamestown, New York, one of sixteen awarded. She was the only Canadian named. The award was given in recognition of her *Nestbox Program* designed for fifth and sixth grade students. ■



Photograph by Ron Kingston

Eastern Bluebird on feeder February 1992 at Ron Kingston's home in Charlottesville, Virginia. The feeder has two glass panels. Note the squirrel baffle below attached to the post. Bluebirds dine on dried dogwood fruit.

Pennsylvania State Parks Bluebird Trails Program 1991

1991 marks the eleventh year that state parks have been recording and tabulating their efforts to assist the Eastern Bluebird through the Pennsylvania State Parks Bluebird Trails Program. Since this program began, remarkable success has been made in assisting Eastern Bluebirds in finding homesites and habitat needed to raise their young.

Although hot and dry best describes the weather during the 1991 breeding season, we still managed to fledge a total of 2,124 bluebirds. Martha Coulter from Pymatuning State Park noted on her report that the heat affected the low number of fledglings at both the park trail and her bluebird boxes at home. Despite the adverse weather conditions, the program managed to experience an overall survival rate of 93% from the time of hatching to fledging. This represents the highest survival rate since the program began!

The volunteers at Codorus State Park experienced a "banner bluebird year" as they fledged a total of 210 bluebirds from the 60 boxes used this year. Cecil Hazlett at Bald Eagle State Park spearheads an excellent program and managed to band a total of 146 nestlings and 6 adults. Also worth noting is that 1991 marked the twenty-third year of monitoring for Delbert Zimmerman at Memorial Lake State Park.

Of the 486 boxes used by bluebirds, the number of eggs laid per box averaged 5.0. This is above the 11 year average of 4.7. However, the percentage of boxes used by native cavity nesting species other than bluebirds continues to be quite high. Of the total boxes available in 1991, 28% were used by bluebirds and 55% were used by other species. This poses the continuing question of how to manage this situation. If our only goal is to provide habitat for bluebirds, the situation can be improved by monitoring box placement and moving boxes to a more appropriate habitat while extirpating undesirable species. If our goal, however, is to provide habitat for all species, our results can be considered successful with only 17% of all available boxes not being used.

It is difficult to compare total figures such as eggs, hatchlings, and fledglings from year to year because of the many variables. One of the most obvious variables is the annual fluctuation in the total number of boxes available. This year showed a decrease of 285 boxes available. This, however, does not mean that those boxes have been removed from existing trails; instead, we are experiencing a decrease in the number of trails being monitored. Four parks that reported results in 1990 did not report in 1991. This illustrates one of the most challenging obstacles for our program. Recruiting and maintaining our volunteer force continues to be a program priority. ■

—Jean Kling, *Environmental Education Specialist*

IN MEMORIAM

Art Credits

Jon E. Boone: 82, 114
Suzanne Pennell: 102, 116

Each year the spring issue of *Sialia* carries a list of memorial gifts which have been received by the North American Bluebird Society during the preceding year. Contributions can be made as general donations to the Society or can be specified for research, education, or gift memberships.

Happiness

I have often tried to lure bluebirds near
With backyard houses within my gaze;
Overjoyed, I find that this is the year
That two flashes of blue brighten my days.

I tend my lawn and garden with care
And daily check on the welcome duet
In a well-built nest new life is there
Today the eggs became a young quartet.

Mother bird flies out when I appear,
To perch on a wire at a service pole;
With insect in bill the father comes near,
To feed his mate and nourish my soul.
—Earl Villers

Now Is Forever

I watched a bluebird build her nest
And chant an evening song.
She sang as if this evening's work
Were all the ages long.

Complete! complete! were the notes I heard.
The nest was but half done!
Complete! complete! she chanted on,
As if the day were won.

Tomorrow was not in her song.
No yesterday sang she,
Complete! complete! she chanted still,
Today's eternity.

—Elwell Jones

(Boosters—Continued from inside back cover)

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(Continued on page 120)

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 maladroit actions 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; Family \$25; Sustaining \$30; Supporting \$50; Contributing \$100; Corporate \$100; Donor \$250; Life \$500. Add \$2.00 per year for Canada and Mexico and \$3.00 per year for other countries (surface mail). U.S. funds only, please. Amounts over \$6.00 are tax deductible.

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