

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 *Motacilia* which is now reserved for the wagtails. It was William Swainson (1789-1855), who, in 1827, decided that the bluebirds needed a genus of their own within the thrush family (*Turdidae*). He selected the generic name *Sialia* which he simply adapted from the species name *sialis* which Linnaeus had used. Therefore, the scientific name for the Eastern Bluebird is *Sialia sialis* (pronounced see-ahl'-ee-ah see'-ahl-iss). Similarly, the Western Bluebird and Mountain Bluebird, the two other species within the genus, were named *Sialia mexicana* and *Sialia currucoides* (coo-roo-coy-dees) respectively. All three bluebird species are native only to the North American continent, although each inhabits different regions generally separated by the Rocky Mountains and by altitudinal preferences.

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

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Sialia

The Quarterly Journal
About Bluebirds

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COVER

Art Editor M. Suzanne Probst depicts two adult Eastern Screech-Owls perched on a branch.

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 Graeloch Road, Laurel, Maryland 20723.

Presidential Points

Charlotte Jernigan

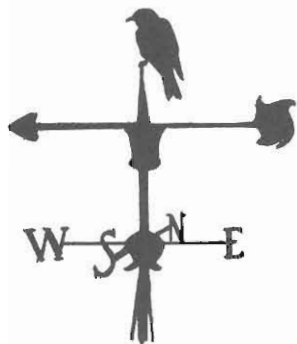
We live in one world that we all share, and on one earth from which we all receive our many blessings. Rachel Carson's works often remind us that we need to struggle to understand the necessity for protecting our environment and appreciating it. Every one of us needs nature. We need it for food, health, and scientific innovation, and for the prevention of floods, droughts, and epidemics. We can't underestimate the need for wild places, animals, and plants for recreation and inspiration. But most of all we need NATURE for SURVIVAL.

As we enjoy the observations that we make from season to season, we find ourselves appreciating the changes and enjoying species in the animal kingdom that are not always available from the view out the window or for that matter within the borders of our state.

The Oklahoma panhandle appears to a lot of people to be a truly forsaken place, but I can assure you that there are many who travel hundreds of miles to search out its specialties.

The panhandle is where I first saw a Lewis' Woodpecker (*Melanerpes lewis*), a visitor from the West. They are about 10 3/4" long with a greenish-black head and back, a gray breast, a dark red face, and a pinkish belly. Their main food is insects which are mostly caught in the air; however, fruit, acorns and other nuts are also savored. Lewis' first shell the acorns and then put them in tree bark. They don't drill holes, but rather tailor the food to fit the natural crevices to be used. Territorially they defend only immediate nest sites and guard nut stores.

The male usually selects the nest site; he also incubates and broods at night. The pair alternate during the day. They usually excavate their own cavity, but



sometimes use natural cavities or holes excavated in previous years. The eggs are white. It is the only woodpecker that routinely perches on wires.

Populations are now apparently stable for the Lewis'; however, it was Blue-Listed from 1975 to 1981, of Special Concern in 1982, and of Local Concern in 1986.

The "Blue List" was a list started in 1971 by the National Audubon Society's ornithological field journal, *American Birds*. They began publishing a list to provide early warning of those North American species undergoing population declines. In 1981 a "decade" list was published which was a list of species that had previously appeared on the Blue List, plus the 69 birds nominated for listing that year. Updates of the Blue List continue.

Let's do everything that we can to help minimize the need for such a list for the sake of ALL of US! ■

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Do Nest Boxes Help Alleviate Nest-Site Competition by European Starlings on Northern Flickers?

Danny J. Ingold

Abstract

During three breeding seasons I monitored 54 pairs of Northern Flickers (*Colaptes auratus*) in east-central Ohio to determine whether flicker nest boxes placed near active flicker nest cavities would help reduce nest-site competition by European Starlings (*Sturnus vulgaris*). Twenty-seven of 40 flicker pairs in the presence of starlings (68%) lost a total of 42 cavities to starlings in spite of the presence of a nearby flicker nest box, and nine of these pairs lost two or more cavities to starlings. Thus, the presence of nest boxes did not appear to help nesting flickers and may have actually deterred them by attracting additional starling pairs. During their initial nest attempt, control flicker pairs (nesting in the absence of starlings) with nest boxes produced larger clutches, more nestlings and more fledglings than experimental flicker pairs (nesting in the presence of starlings). Control flicker pairs were not adversely affected by the presence of a nearby nest box and 64% of such pairs eventually fledged young from their excavated nest cavities. On the other hand, no control flicker pairs and only one experimental flicker pair opted to nest in a nest box versus their excavated or renovated nest cavity. Only three of 40 starling pairs opted to nest in flicker boxes when excavated flicker cavities were available; however, starlings eventually fledged young in only nine of the 42 flicker cavities they usurped (21%).

Introduction

For several decades it has been documented that European Starlings usurp nest cavities from a variety of woodpecker species (Wood 1924; Shelley 1935; Bent 1939; Howell 1943; Dennis 1969; Erskine and McLaren 1976; Jackson 1976; Troetschler 1976; Short 1979, 1982; Ingold 1989, 1994; Weitzel 1988, Kerpez and Smith 1990), as well as from several secondary cavity-nesting species (Bent 1950, Zeleny 1969, Erskine and McLaren 1979, Feare 1984, Ingold and Ingold 1984). Ingold (1989) found that Red-bellied Woodpeckers (*Melanerpes carolinus*) in areas of starling overlap actually suffered reductions in their reproductive output compared to those that nested in the absence of starlings. Even Northern Flickers, one of the largest woodpecker species in North America, commonly lose

nest cavities to starlings, particularly early in the nesting season (Kilham 1959, Sedgwick and Knopf 1990, Ingold 1994). Ingold (1996) found that flickers also suffered reductions in their reproductive output as a result of starling harassment since they were often forced to delay nesting until later in the season. In spite of being forced to delay nesting, however, Ingold and Densmore (1992) found that in several instances, flicker pairs that lost a nest cavity to starlings early in the season, often returned to nest in their original cavity or in another cavity in the same tree.

Northern Flickers are sometimes considered to be weak excavators (Harestad and Keisker 1989, Winkler et al. 1995) and have been known to use wooden nest boxes for nesting (Bent 1939, Bower 1995). Assuming that adequate nest cavities and nest sites (i.e., dead limbs and snags) are in short

supply and that the availability of suitable nest sites limits the reproductive success of cavity-nesting birds (see Mannan et al. 1980, Nilsson 1984, Li and Martin 1991), then it is possible that a nest box placed near a flicker nest cavity could provide a suitable alternative nest site for the flickers or the starlings competing for the flicker cavity. During this study I placed a nest box designed for flickers near several active flicker nest cavities early in the nesting season to (1) determine if starlings or flickers would take up residency in the box, thus potentially accommodating the other species in the flicker nest cavity; (2) determine if there is a difference in the reproductive success of control flickers (in the absence of starlings) with a box and experimental flickers (in the presence of starlings) with a box; and (3) determine if there is a difference in the timing of nesting between control and experimental flicker pairs.

Study Area and Methods

From late March through late July 1994-1996, I located active Northern Flicker nest cavities in the village of New Concord and on several agricultural areas around New Concord, in Muskingum and Guernsey counties in east-central Ohio. Flicker nests were located most frequently in woodlands, but were also found in forested and residential areas (see Ingold 1994, 1996 for a more detailed description of the study area). Flicker pairs in the absence of starlings were considered controls while those in the presence of starlings were considered experimental pairs. More precisely, flickers were considered controls if starlings were not detected within a circular area with a diameter of about 70 yards (23 m) centered around their cavity tree.

I erected a flicker nest box similar to the one designed by Bower (1995) within three to six feet (1-2 m) of each active flicker cavity that was still being excavated or in which flickers had begun

egg laying. During 1994 I placed cedar woodchips or planer shavings at the bottom of each nest box to facilitate flicker use. During 1995-1996 I filled the boxes up to the cavity entrance with cedar woodchips to further encourage flicker use. Each nest box and active woodpecker nest cavity was observed for a minimum of 30 minutes each week between 0730 and 1800 to determine its status and to detect possible starling/flicker interactions. Because I was frequently not at the nest site when starlings took over a nest cavity, I considered a cavity to be usurped when two criteria were met: (1) if I observed starlings in the cavity or if there was evidence that starlings occupied the cavity (such as fecal material around the cavity entrance and/or grass inside the cavity), regardless of whether or not they subsequently nested in the cavity; and (2) if the flicker pair did not return to occupy the nest cavity within a two week period after it was initially taken over. Flicker cavities and nest boxes that became inactive for more than four consecutive weeks during any point in the study were no longer monitored during that nesting season. Starlings that initiated nest attempts in flicker boxes, after having usurped a flicker cavity, were allowed to continue nesting if the flickers were still in the area, thus giving the flicker pair a chance to return to their original nest cavity. Starling nest attempts in boxes at nest locations that flickers had abandoned several weeks or months earlier were terminated at the egg-laying or incubation stage. Using a 32 foot extension ladder, once or twice a week I climbed to those flicker cavities that I could reach to confirm occupancy and to quantify flicker clutch sizes and nestling numbers. Nest contents were examined with a light and a mirror.

Results

Flicker Response.--I located and monitored 54 pairs of Northern Flickers and erected 41 nest boxes near flicker nest cavities during this study. Twelve of

14 control flicker pairs (86%) produced clutches in their original nest cavity in spite of a nest box situated nearby. Nine of the 14 pairs (64%) eventually fledged some young during their first nest attempt. None of the control flicker pairs undertook a nest attempt in the nearby nest box instead of their nest cavity.

Twenty-seven of 40 experimental flicker pairs (68%) lost their cavities to starlings in spite of the presence of a nearby box. Of these, 18 flicker pairs appeared to have lost no more than one cavity to starlings; however, an additional six pairs lost at least two cavities to starlings, one pair lost at least three cavities, one pair lost four cavities, and one pair lost five cavities. A significantly smaller proportion of experimental flicker pairs fledged young during their initial nest attempt versus control pairs (8 of 40; 20%; $X^2=7.49$, $df=1$, $P<0.01$). Control flicker pairs produced significantly larger clutches than did experimental pairs ($t=2.16$; $df=28$; $P<0.05$); on the other hand, although mean nestling and fledgling numbers for control flicker pairs were larger than experimental pairs, they were not significantly so (Table 1). However, when I divided flicker clutches into early nests (those completed before 1 June, the date by which all uninterrupted pairs had initiated their first clutch) versus late nests (completed after 1 June), clutches, nestling numbers, and fledgling numbers from early nests were significantly larger than those from late nests ($P<0.05$ in each case; Table 1). Moreover, all 10 late-nesting flicker pairs encountered starling harassment early in the nesting season. Only one experimental flicker pair undertook a nest attempt in the nearby nest box, in which eggs were laid. This particular pair lost its excavated nest cavity to starlings and moved to the nest box where they eventually fledged four young. In the meantime, the starlings abandoned the excavated cavity they usurped and disappeared from the area.

There was a significant negative correlation between the number of flicker cavities usurped and the progression of time ($F=8.14$; $P=0.02$; $df=1,8$) (Fig. 1); only two cavities were usurped after 31 May. At least 10 of 27 flicker pairs (37%) that lost cavities to starlings, however, returned to nest in the same area and often in the same cavity tree, in late May or June.

Starling Response.--At only 3 of 40 experimental flicker cavities (7.5%) did starlings opt to use a nest box for nesting rather than attempt to usurp the flicker nest cavity or move elsewhere to nest. In each of these instances, both the starlings and flickers successfully fledged young from nests within close proximity of each other. At 10 experimental flicker cavities (25%), starlings neither usurped the active flicker cavity or used the nearby nest box, and at five of these locations (50%) the flicker pair eventually fledged some young. At the 42 flicker cavities starlings did usurp, they subsequently laid eggs in at least 15 of them (36%) and fledged young in only nine (21%). In addition, at eight of the usurped cavities (19%), starlings subsequently laid eggs in the nearby nest box rather than in the cavity, and in four instances (9.5%) they laid eggs in both the usurped nest cavity and the nearby flicker nest box. However, in all four instances in which starlings laid eggs in both the nest box and nest cavity, more than one starling pair was involved.

Nest Box Trees Used Simultaneously.--At 13 locations where I erected flicker nest boxes, two or more different species undertook nest attempts (in which eggs were laid) in the nest box and/or cavities situated near the nest box at about the same time. At five locations, one pair of flickers and one or more pairs of starlings were undergoing egg-laying or incubation at about the same time. In three instances, the starlings used the nest box while the flickers used a nearby nest cavity; in all

Table 1. Comparison of the reproductive success of control flicker pairs (in the absence of starlings) and experimental flicker pairs (in the presence of starlings) (top); comparison of the reproductive success of early-nesting flickers (clutches completed before 1 June) and late-nesting flickers (clutches completed after 1 June) (bottom). Because of small sample sizes, reproductive data for all three years were combined.

Variable	Control Flickers			Experimental Flickers			P-value
	N	Mean	SD	N	Mean	SD	
Clutch size	9	7.44	2.24	21	5.43	2.38	0.039
Nestling numbers	9	5.56	2.46	21	3.86	2.76	0.098
Fledgling numbers	9	3.78	2.99	21	2.57	2.64	0.318

Variable	Early-nesting Flickers			Late-nesting Flickers			P-value
	N	Mean	SD	N	Mean	SD	
Clutch size	22	7.18	2.08	9	4.56	2.07	0.003
Nestling numbers	22	4.86	2.96	10	3.20	2.30	0.048
Fledgling numbers	22	3.64	2.77	10	1.70	2.26	0.058

three instances both the starlings and flickers fledged young. At a fourth location flickers with eggs lost their nest cavity to starlings, while a pair of starlings had eggs in the nearby nest box. It was unclear whether it was the starling pair with eggs that usurped the flicker nest cavity or another starling pair. At a fifth location in late May 1995, I found three flicker eggs and two starling eggs in the same flicker nest cavity at the same time. A week later all the eggs were gone; starlings returned, however, within a few days and initiated a new clutch.

At five locations, one pair of flickers and one pair of Red-headed Woodpeckers (*Melanerpes erythrocephalus*) nested in the same tree simultaneously. In all but one instance, both species successfully fledged young, and, in the process, generally did not interact with each other. At two of these locations the

flicker and Red-headed pairs did not complete nesting until mid- to late-July as a result of starling harassment earlier in the season. In one instance, the flicker clutch disappeared and was perhaps predated after the Red-headed pair had completed nesting.

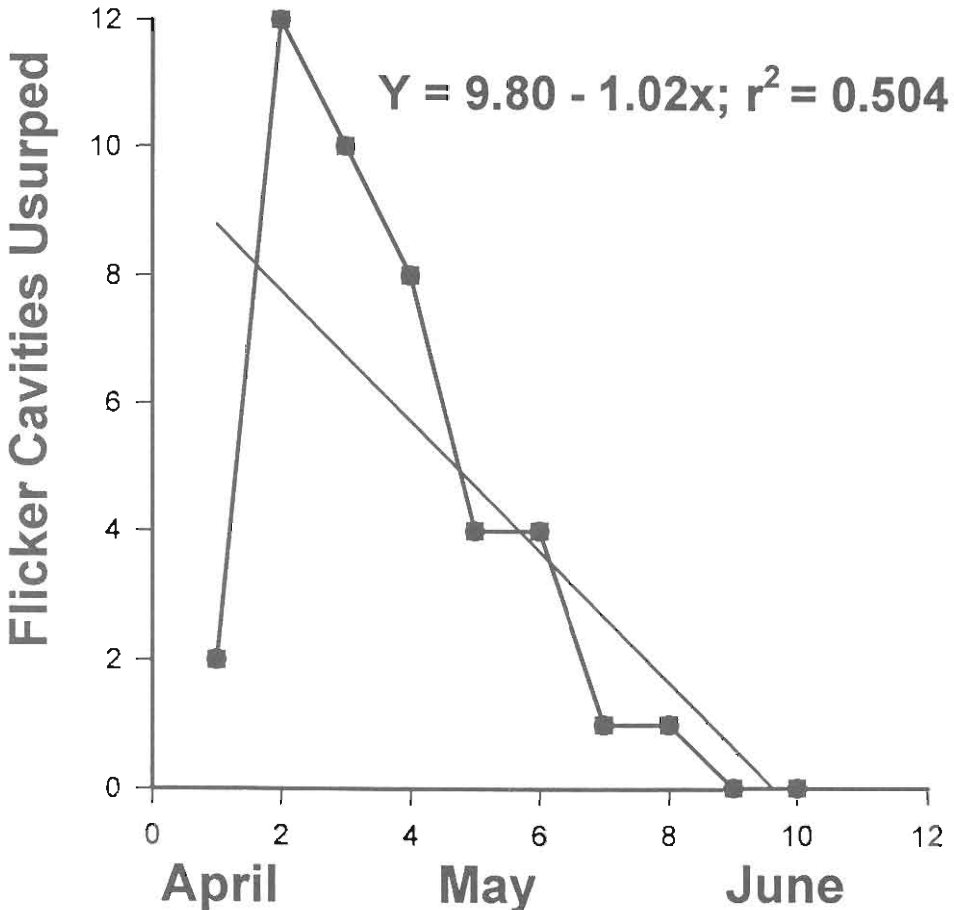
At one of the remaining three locations, a pair of American Kestrels (*Falco sparverius*) laid eggs in the flicker nest box while several pairs of starlings were incubating clutches in the same snag. Within a week after I discovered the clutch, it had disappeared and the starlings had built a grass nest inside the box. At another location starlings and Red-headed Woodpeckers nested in the same snag at about the same time and both successfully fledged young in June. I witnessed only a few competitive interactions at this location between these species. At a third location I found seven to eight pairs of nesting starlings,

one pair of nesting Pileated Woodpeckers (*Dryocopus pileatus*), and one pair of nesting flickers in the same snag at the same time. Most of the starlings fledged young at this location by the end of June. The Pileateds fledged offspring during the first week of June, apparently without encountering any starling harassment. The flicker pair lost five nest cavities to starlings from late April through mid-June before successfully undertaking a nest attempt in late June. This flicker pair eventually fledged young in late June in one of the nest cavities that starlings had usurped from them earlier in the season.

Discussion

Flicker Response to Boxes.—Although it appears that suitable nest cavities were in short supply in this study, flicker nest boxes attached near active flicker nest cavities, did not alleviate starling nest-site competition. In fact, flickers lost nest cavities to starlings at a much higher rate (68%) than Ingold (1994) reported for this species in this area from 1990-1992 (14%). Neither flickers in the presence or absence of starlings appeared to show much interest in the nest boxes. Only one of 27 flicker pairs that lost one or more nest cavities to

Figure 1. The relationship between time and the number of flicker nest cavities usurped by starlings per week during 1994-1996.



starlings initiated a nest attempt in the nearby nest box. This may be explained in part by the fact that starlings often reacted aggressively toward flickers when they came too close to the usurped nest cavity. It may be that the nest boxes, typically only situated three to six feet away from a flicker cavity, were within the space that a starling will defend when initiating a nest attempt. In addition, in many instances several starling pairs were present at a cavity tree, and even after one starling pair usurped the flicker nest cavity, a second or third pair would often temporarily or permanently occupy the nest box, thus discouraging flickers from using the box. Bower (1995) reported that flickers successfully nested in the flicker box he designed, but only after he shot several starlings that attempted to take over the box.

Only one of the 14 flicker pairs in the absence of starlings opted to use a nest box rather than excavate a new nest cavity or renovate an old excavated cavity or knothole. In most instances, boxes were not erected until the flicker pair had initiated cavity excavation or renovation; however, even after boxes had been in place for one or two years, control flickers continued to avoid using them for nesting. This suggests that in the absence of starlings (i.e., more densely forested areas), suitable nest trees or cavities may have been more common. Although flickers are not considered to be strong excavators (Bent 1939, Winkler et al. 1995), it appears that when given a choice, they prefer to excavate their own nest cavity in a snag or dead limb, or use a previously excavated or natural cavity rather than take up residency in a nest box. Bower (1995) and Jackson (1997) do make several useful suggestions regarding the construction of flicker nest boxes that might expedite their use by flickers. Bower (1995) suggests, however, that unless one is willing to control starlings and House Sparrows (*Passer domesticus*), it is unlikely that such

boxes will attract flickers which are able to undertake successful nest attempts.

Although flickers generally avoided nesting in boxes placed near their cavities or cavity starts, in the absence of starlings, the boxes did not appear to disturb them or deter them from carrying on with their normal nesting activities. Eighty-six percent of control flicker pairs produced clutches and 64% of control pairs eventually fledged young from cavities with a nest box situated nearby. Conversely, in the presence of starlings, not only did flicker nest boxes fail to assist the flickers, but they may have acted as a detriment by attracting more starlings. Although Ingold (1994) did not erect nest boxes during his study on starling/woodpecker competition in Ohio, the focus of the study was on Red-bellied and Red-headed woodpeckers and the flicker population may not have been adequately surveyed. In this study, only 38% of flicker pairs in the presence of starlings were able to maintain control of their nest cavities, even with a flicker nest box attached nearby. Ironically, aside from their common need to obtain and defend a nest cavity, the ecological niches of starlings and flickers overlap relatively little. Once starlings in this study had obtained a suitable nest cavity and initiated egg laying, they generally ignored other conspecifics or other species of cavity nesters that took up residence in nearby cavities. Similarly, nesting flickers generally ignored nearby starlings as long as the starlings did not contest their nest cavity. Ingold (1990) also found a similar willingness for starlings and woodpeckers to nest peacefully within close proximity of each other after each pair had established control of their nest cavity and initiated egg laying.

Starling Response to Boxes.--The data in this study suggest that European Starlings preferentially chose to pursue the usurpation of active flicker nest cavities, independent of whether or not they were freshly excavated, previously excavated, or knothole cavities, rather

than undertake a nest attempt in a seemingly suitable nearby nest box. Only 7.5% of starlings chose to nest in a nest box rather than usurp the freshly excavated or renovated flicker cavity, use an old previously-excavated cavity, or move to another location. In eight instances, starlings laid eggs in the nearby nest box rather than in the flicker cavity they usurped, and in four instances starling pairs initiated nest attempts in both the usurped flicker cavity and the nearby nest box. Although starlings are undoubtedly nest-site generalists that are willing to nest in cracks and crevices of houses and buildings, old knothole cavities, old excavated cavities, and nest boxes (Bent 1948, Zeleny 1969, Dakin 1984), data are accumulating that support the hypothesis that they prefer freshly excavated woodpecker cavities over many of the alternatives (see Ingold 1989, 1994; Kerpez and Smith 1990). An enigma remains however. In this study, although starlings usurped 42 active flicker nest cavities, they subsequently fledged young in only nine of them (21%). Of 32 woodpecker nest cavities usurped by starlings in east-central Ohio in 1990-1992, starlings subsequently abandoned 22 (69%) of them before initiating egg laying (Ingold 1994). Thus, although starlings seem to show a definite preference for freshly-excavated woodpecker cavities for nesting, frequently they fail to nest in the cavities they usurp. One possible explanation for this is that starlings, at least on occasion, drive away the woodpecker pair before they have completed excavating the nest cavity. I have observed a few nest cavities in this study and numerous others in the past that were taken over by starlings before they were completed. In each of these instances the starlings subsequently abandoned the cavity because it was apparently not deep enough.

Nonetheless, there were several additional instances in this study and in

past studies in which I observed starlings usurp a completely excavated flicker nest cavity and then abandon it after building a nest inside or failing at the egg-laying or incubation stage. Clearly, further research should be undertaken to address why this happens.

Implications on Flicker Reproduction.-- Ingold (1994) suggested that although flicker pairs lost nest cavities to starlings, they may not have suffered reductions in their reproductive output since many of these pairs returned, often to their original cavity tree, to nest successfully later in the season. Indeed the flicker nesting season may extend through July, although the peak of their nesting effort occurs from early May through early June (Moore 1995). In this study several experimental flicker pairs (at least 37%) that lost nest cavities to starlings in late April and early May undertook a second nest effort in June or July, often in the same cavity tree or immediate area where they undertook their first nest effort. The clutch sizes of these pairs were significantly smaller than those of control pairs; in addition, nestling and fledgling numbers were smaller, but not significantly so. When I arbitrarily divided all clutches into those completed before and after 1 June (early vs. late clutches), I found that not only were early clutches significantly larger than late clutches, but nestling and fledgling numbers from early clutches were also significantly larger than those from late clutches. Ingold (1996) reports that early clutches, nestling numbers, and fledgling numbers from flicker pairs studied from 1990-92 and 1994-95 in this area were also significantly larger than clutches, nestling numbers, and fledgling numbers from late-nesting pairs. Thus, although flickers apparently routinely attempt to renest later in the season if their initial nest effort is disrupted (see Short 1982, Moore 1995, Winkler et al. 1995), they may still be at a reproductive disadvantage since their fecundity drops off as the nesting season progresses. It

is probable then that flickers are exposed to opposing simultaneous natural selection pressures. On the one hand starling competition early in the season could select for delayed nesting; however, the detrimental effects of later nesting (i.e. warmer temperatures, less food and less time for the young to mature before winter) should select against late nesting (see Ingold 1996). The stronger of these selection pressures remains to be determined; even so, it is clear that European Starlings are having a significantly adverse effect on the reproductive success of Northern Flickers in Ohio. ■

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Date _____

**North American Bluebird
Society Affiliate**

FIELD NOTES



NAME _____

Front Cover

**The Top Ten in
BLUEBIRDING...**

1. Habitat in open area, scattered trees.
2. Safe, weather-proof nestbox.
3. Hole size, 1-3/8" x 2-1/4" or round 1-1/2".
4. Safe mounting on pipe 5 feet high.
5. Space 300 feet apart, pairs 20-40 feet.
6. Allow the valuable Tree Swallow to nest.
7. Monitor weekly until nestlings are 2 weeks old.
8. Keep nest free of blowflies.
9. Removal of sparrow nests and eggs.
10. Share your project and information.

Effective Conservation

Back Cover

The Bluebird Recovery Program of Minnesota has produced a small "Field Notes" note pad with unlined blank pages. It is a handy pocket size and is designed to encourage both record-keeping and drawings that can be used on the "Kid's Page" of the newsletter.

Experimental Nest Boxes for Bluebirds: An Update

Ronald A. Bittner

I started experimenting with Mountain Bluebird nest box designs in 1987. The number of kinds grew to 10 by 1990 and to 13 by 1994. Some are standard nest boxes with varying dimensions; others are test boxes of several designs with two entrances. I now have 72 boxes of 13 kinds. Previously I showed that bluebirds prefer the test boxes and Tree Swallows the standard boxes¹.

This article gives the results up to 1995 for the two most successful kinds of test boxes. When these boxes are paired with standard boxes with predator guards, bluebirds have favored the test boxes by more than a factor of four. Because of serious raccoon predation in 1989 and 1990, my objectives were expanded to develop a box that was raccoon-resistant without the use of special mounting poles or other predator guards, similar in size and weight to standard nest boxes for easy mounting on fence posts, and relatively easy to build.

The two test box types (see Fig. 1) have double entrances. Plan A uses sloping passages to prevent raccoons reaching into the nest. The entrances are slots 1.25" x 2.5". Plan B uses a shelf below the entrance holes for predator protection. The circular entrances are 1.5" in diameter. Earlier versions of this type used slot entrances and external guards similar to Plan A. The change to round holes without external guards simplified the plan while maintaining adequate predator protection. Both types have a floor size 5.5" x 5.0". Depth from the top of the baffle to the floor is about 7".

My standard boxes have a 1.5" diameter circular entrance. Each has a raccoon guard, an interior baffle below the entrance. Some also have an exterior

guard, a small block of wood with a 1.75" hole, thickening the entrance wall. The floor size is about 5" x 5"; depths range from 6-7".

Boxes are mounted on fence posts bordering grazed pasture with some scattered trees--good bluebird habitat. At each site, a standard box and a test box are mounted about 10 yds apart, the distance between sites being about 250 yds. To avoid biasing the data, each type has boxes at varying distances from trees; ranging from 50 yds to 0.5 miles. Boxes are monitored regularly to determine nesting species and nesting success.

Table 1 gives the occupancy by species for the two test boxes and the adjoining standard boxes. An occupied box is defined here as one in which a nest is built and at least one egg is laid. The "Other/Empty" category includes boxes used by other species and boxes used by bluebirds or swallows where the nesting did not advance to the egg-laying stage. Note that the sum of the other three categories can exceed the number of box-years. This is because bluebirds and swallows sometimes nest in the same box in one year, usually with the swallows following the bluebirds.

The table shows the strong preferences. Of the 109 boxes occupied by bluebirds at the Plan A sites, 90 were test boxes and 19 were standard boxes. Of the 58 boxes occupied by bluebirds at the Plan B sites, 47 were test boxes and 11 were standard boxes. At both types of sites, swallows chose the standard boxes by an even wider margin. Some of the test box data came from earlier versions of the latest plans.

An interesting aspect of the swallow data is that there are two factors

Figure 1. Two experimental double-entrance bluebird nest boxes (Plan A and Plan B).

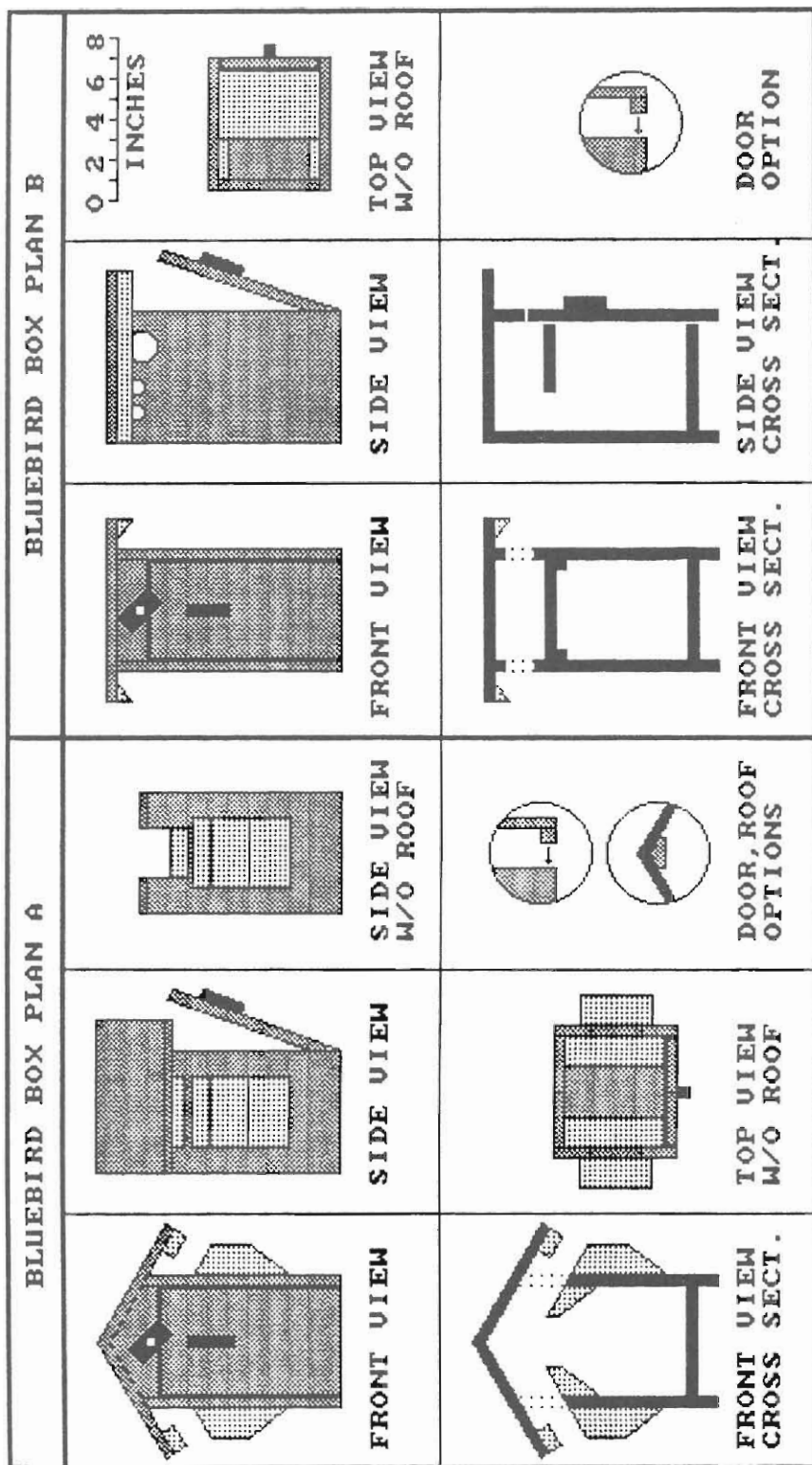


Table 1. Experimental boxes and adjoining standard boxes occupied by bluebirds and swallows

Type of Box	Box-years	Bluebirds	Swallows	Other/Empty
Plan A Experimental Boxes	119	90	11	19
Adjoining Standard Boxes	119	19	100	5
Plan B Experimental Boxes	70	47	9	18
Adjoining Standard Boxes	70	11	49	14

involved in the occupancy rate. In addition to the swallows' preference for the standard boxes, there are more standard boxes available when the swallows nest. This is because bluebirds usually choose the test boxes, leaving the standard boxes for the later-nesting swallows.

Discussion. Swallows spend considerable time looking out their entrance hole. With two entrances, they cannot guard both at once, hence they may dislike the double-entrance boxes. Bluebirds may prefer the test boxes because there is less competition with swallows. This is probably a minor point because bluebirds usually nest first. Bluebirds also may prefer a more open box. Note that they occasionally nest on a ledge on the interior or exterior of a building. In addition, bluebirds may prefer an entrance which is partly concealed by an overhanging roof, or one where the bird enters at an upward angle. Bluebirds occasionally fly upwards to reach a nest. For example, they have been known to nest in such places as the outlet of a grain auger in a farm yard. The test boxes are easy to enter and safe to inspect. A bird is not required to squeeze through a long, tight passage before it can inspect the box, as one type of predator guard requires. They may view the boxes as being more predator-resistant. The nest cannot be seen by a predator unless it actually enters the box. However, this is also true for most of the standard boxes used in this experiment, since they are equipped with predator guards.

Acknowledgments. I thank Bill Anaka of Canora, SK for building and testing

boxes based on these designs. He supplied much of the data in Table 1. For their interest in this project, I also thank Roxanne Brown of Assiniboia, SK, Don Stiles of Calgary, AB, and Myrna Pearman of Ellis Bird Farm, Lacombe, AB. ■

¹Bittner, R A. 1993. Bluebird nest-boxes: unusual designs *Blue Jay* 51:49-51.

Box 97
Abernethy, SK. SOA OAO

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Jon E. Boone 82, 116
Suzanne Pennell 118



The city of Belleville, Illinois has honored bluebird activist H. Coy Winter by designating a road behind his house as "Bluebird Alley." Winter dreams of extending bluebird trails both east and west from Illinois to form a transcontinental trail. He welcomes inquiries. Direct letters to 1802 W. Adams, Belleville, IL 62223.

1996 Nesting Box Report

Kevin L. Berner and Denise R. Moore

Introduction

The North American Bluebird Society (NABS) has compiled the results of nesting box surveys for the last 16 years. This year we summarized 322 surveys from several thousand trail monitors (see Table 1). Some reports were sent in by individuals while others represented state-wide summaries of data from scores of individuals. Data within survey forms varies widely in completeness. For many individuals extensive data was completed for each of several nest box designs. Larger groups often included only total numbers of boxes and young fledged.

Our tallies indicate that approximately 67,570 bluebirds of all three species fledged in 1996 which is down from the 79,411 reported in 1995 (see Table 2). In 1996, 16,185 bluebirds fledged in the eastern region, down 19% from 19,881 in 1995. The central region declined 51% from 36,283 to 17,949 bluebirds fledged in 1996. The western region jumped from 23,247 to 33,436 bluebirds fledged in 1996. In both years approximately 30,000 nest boxes were included in the summary. The total number of bluebirds fledged has ranged from 57,000-80,000 in eight of the last 10 years. Only one year fell below that range and one year exceeded that range over the decade. Natural populations vary from year to year due to changing weather conditions and population levels of predators. Variations in NABS statistics fluctuate based on these true population changes and also due to inconsistencies in submission of data. The addition or absence of reports, particularly of state-wide organizations adds a considerable amount of bias to the data reported in these summaries.

East

Willard Cash of Goldsboro, North Carolina continues to be a productive trail monitor. He fledged 895 Eastern Bluebirds and smaller numbers of four other species. His success was enhanced by the removal of over 40 House Sparrow adults and many eggs.

In Middletown, Maryland, Elizabeth Nichols observed the loss of 50% of bluebirds and swallow nestlings due to House Sparrows' predation. Brooding females were also killed by these introduced birds. She feels that she would have lost even more nestlings if she had not provided supplemental mealworms during the cold and rainy nesting season.

Mrs. Robert Lynch of Free Union, Virginia lost five bluebirds that were close to fledging and suspected that five swallows also were the victim of a five foot black snake. After consuming the bluebirds, the snake was unable to exit through the box hole. She had not lost

any young in this manner in 10 years. She now not only greases her mounting poles but has also added baffles. Ann King of Cedar Grove, North Carolina lost 6 of 23 bluebird chicks to black snakes. This was in spite of her use of stovepipe guards, skirted guards, sulfur, mothballs, tackstrips, and removal of snakes from her trail.

Andrew and Lorna Beasley fledged Great Crested Flycatchers from a bluebird box after woodpeckers enlarged the entrance hole along their Live Oak, Florida trail. They also fledged 4 American Kestrels, 5 Eastern Screech-Owls, and 16 Purple Martins.

Concern is occasionally expressed about placing nesting boxes on golf courses because of potential problems with pesticides. In Summerville, South Carolina most of Wayne Van Vranken's boxes have been on a golf course for at least a dozen years. His 22 standard nesting boxes fledged 39 bluebirds.

Richard Wells of Springville, New York

Table 1. Number of surveys and nest boxes by region.

	East	Central	West	Total
No. surveys	155	138	29	322
No. standard boxes	4,818	4,195	4,379	13,392
No. Peterson boxes	159	939	44	1,142
No. slot boxes	56	306	95	457
No. PVC boxes	21	276	0	297
Other or unspecified box styles	3,473	4,115	7,097	14,685
Total no. of boxes	8,682	9,969	11,643	30,294

Table 2. Number of birds fledged by region.

Species	East	Central	West	Total
Eastern Bluebird	16,185	17,943	21	34,149
Western Bluebird	0	1	9,137	9,138
Mountain Bluebird	0	5	24,278	24,283
All bluebird species combined	16,185	17,949	33,436	67,570
Black-capped Chickadee	485	333	157	975
Carolina Chickadee	264	302	16	582
Mountain Chickadee	0	0	272	272
Chestnut-backed Chickadee	0	0	20	20
Tufted Titmouse	174	116	0	290
Plain Titmouse	0	0	336	336
White-breasted Nuthatch	29	16	107	152
Brown-headed Nuthatch	31	62	0	93
Red-breasted Nuthatch	0	0	26	26
Pygmy Nuthatch	0	0	0	0
Tree Swallow	6,115	3,865	16,505	26,485
Violet-green Swallow	0	5	297	302
House Wren	1,365	1,278	385	3,028
Carolina Wren	99	57	0	156
Bewick's Wren	0	70	14	84
Great Crested Flycatcher	28	12	0	40
Ash-throated Flycatcher	0	0	314	314
Prothonotary Warbler	0	13	0	13
House Finch	16	4	0	20

Geographic Regions According to States and Provinces

East: Bermuda, Connecticut, Delaware, Florida, Georgia, Maine, Maryland, Massachusetts, New Brunswick, New Hampshire, New Jersey, New York, North Carolina, Nova Scotia, Pennsylvania, Quebec, Rhode Island, South Carolina, Vermont, Virginia, Washington, D.C.

Central: Alabama, Arkansas, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Ohio, Oklahoma, Ontario, Tennessee, Texas, West Virginia, Wisconsin.

West: Alaska, Alberta, Arizona, British Columbia, California, Colorado, Idaho, Manitoba, Montana, Nevada, New Mexico, North Dakota, Oregon, Saskatchewan, South Dakota, Utah, Washington, Wyoming

observed that despite a cooler than average nesting season both bluebirds and Tree Swallows did well. His swallows yielded 220 young for a 87% nesting success rate and his bluebirds produced 220 young for a 77% success

rate. This success rate for bluebirds was 7% above his 10 year average of 70%.

Alice Saunders of Petersburg, Pennsylvania had significant problems in her 58 nest boxes. Raccoons raided 29 nest boxes, snakes predated 17 boxes,

and House Wrens destroyed nests in 7 boxes, and many additional losses resulted from cold, wet weather. She did feel that the Noel guards were effective in reducing predation.

Thomas Mulvey of Pine Beach, New Jersey believes that the harsh winter of 1995-1996 took an exceptional toll on wintering bluebirds. Despite this he fledged 131 bluebirds from 20 nesting boxes. Raymond Marr of Pawtucket, Rhode Island also thought that the harsh winter had decimated bluebird populations. He stated that this was his least productive of the last seven years. His surviving adults produced 183 fledglings.

The Hot Springs Village Audubon Society in Florida reported a 15-20% decline in bluebird nests, eggs, and fledglings even though they increased the number of nesting boxes by 11%. They believe that the cold, late spring and high rates of predation contributed to these declines.

The Calvert County Natural Resources Division in the Prince Frederick area of Maryland fledged 1,189 bluebirds, 30 Carolina Chickadees, 18 Tufted Titmice and 14 Tree Swallows from 447 nesting boxes.

The North Carolina Bluebird Nesting Survey documented 69 respondents fledging 4,218 bluebirds.

Joby Lawson of Shortsville, New York, reporting for the Wayne County Nestbox Network, noted that he had 3 pairs of standard boxes back to back on a fence line where swallows simultaneously nested in both pairs. His group fledged 170 Eastern Bluebirds, 166 Tree Swallows, and 39 House Wrens.

The Ralph Waterman Bird Club in Dutchess County, New York reported fledging 793 bluebirds, 560 Tree Swallows, 147 House Wrens, 6 Black-capped Chickadees, and 6 House Finches from their 559 nesting boxes:

Joe Sedlacek of the Broome County Nestbox Network in New York State reported fledging 324 bluebirds, 78 Tree Swallows, 143 House Wrens, and 12

Black-capped Chickadees. We documented 1,058 bluebirds, 2,119 Tree Swallows, 306 House Wrens, 47 Black-capped Chickadees, and 14 American Kestrels being fledged by members of the Schoharie County Bluebird Society. This was the lowest total in the last 10 years.

Central

Carolyn Fessler of Wagoner, Oklahoma was one of the few NABS members who reported attracting Prothonotary Warblers to her trail. They nested in a gourd hung from a Purple Martin house.

Dick and Marlys Hjort of Chisago City, Minnesota reported that cold, late spring weather caused bluebirds to delay egg laying long after nests were originally built. Good weather following this delay led to a very successful nesting season. They have extremely high numbers of raccoons in their area and extensive trapping efforts have been initiated. Dick and Marlys have found a greased 3/4 in. (1.9 cm) pipe is the best predator deterrent. They have 86 Noel guards and they have found them to be ineffective, and they plan to remove them all. The Hjorts fledged 181 Eastern Bluebirds, 241 Tree Swallows, 31 House Wrens, 4 Great Crested Flycatchers, and 1 Black-capped Chickadee.

Catherine Croke of Grand Marsh, Wisconsin also found the Noel guards to be ineffective. She had raccoons effectively reach beyond these guards to raid nests. She later modified them by increasing their depth by 1 1/2 in. (3.8 cm). At boxes where she did this, no further predation took place while boxes with the standard guards continued to be raided.

Tom Barber of Cambridge, Ohio has fledged 2,058 bluebirds and 320 Tree Swallows in 13 years of monitoring. His most successful box is in his yard where 98 bluebirds have been fledged in the same period. This year his 60 boxes produced 192 Eastern Bluebirds and 40 Tree Swallows.

The Hot Springs Village Audubon Society in Arkansas reported fledging

501 Eastern Bluebirds, 62 Brown-headed Nuthatches (all of those reported for the entire central region), 31 Carolina Chickadees, 15 Tufted Titmice, and 5 House Wrens.

Frank Zuern of Oshkosh, Wisconsin and designer of the tree branch box had Eastern Bluebirds in 20 of his 40 boxes of this type. He fledged 136 bluebirds with no loss of nestlings. Fourteen additional boxes were used by Tree Swallows, and 5 by Black-capped Chickadees. Prothonotary Warblers also used one of his 30 standard boxes.

Minnesota's Bluebird Recovery Program reported a 12% increase in the number of bluebirds fledged compared to 1995. Their members reported 9,876 bluebirds fledging from 12,425 eggs.

The Nebraska Bluebird Directory indicated that 4,992 bluebirds fledged from their members' 3,612 boxes. These birds were nearly all Eastern Bluebirds, with fewer than 10 Mountain Bluebirds found in the extreme western area of the state. They documented 4.3 fledglings for each nesting attempt, the highest level in eight years of surveys.

West

William Anak of Canora, Saskatchewan fledged 759 Mountain and 17 Eastern Bluebirds, 692 Tree Swallows, and 30 House Wrens. He has tested several nest box designs all of which were used at higher rates than standard boxes.

Art Gruenig of Cranbrook, British Columbia reported for the Rocky Mountain Naturalists. They fledged 717 Western and 948 Mountain Bluebirds, 302 Tree and 46 Violet-green Swallows, 23 House Wrens, 23 Red-breasted and 14 White-breasted Nuthatches, and 27 Mountain and 6 Black-capped Chickadees.

Donald Stiles of Calgary, Alberta reported a second consecutive poor year for bluebirds. A late spring delayed nest initiation resulting in reduced numbers of second nestings. His Tree Swallows were at the highest levels ever. Their

nesting cycle was synchronized with a period of favorable weather. His monitors kept track of 2,721 nest boxes and fledged 3,988 Mountain Bluebirds and 6,963 Tree Swallows.

The Prescott Bluebird Recovery Program, headquartered in Portland, Oregon, fledged 526 Western Bluebirds, 216 Violet-green and 190 Tree Swallows, 44 House and 4 Bewick's Wrens, 74 Black-capped Chickadees and 15 White-breasted Nuthatches.

The California Bluebird Society submitted trail data from 180 monitors. They fledged 3,020 Western and 137 Mountain Bluebirds, 295 Ash-throated Flycatchers, 477 Tree and 30 Violet-green Swallows, 314 Plain Titmice, 217 Mountain and 19 Chestnut-backed Chickadees, and 50 White-breasted Nuthatches, 13 Barn Owls, 2 Acorn Woodpeckers, and several other species.

Art Aylesworth reported for the Mountain Bluebird Trails which are primarily within Montana. They fledged 13,682 Mountain and 3,590 Western Bluebirds from 4,596 boxes.

Comments

The nest box survey sheet for 1998 will be simplified in the hope that it will yield consistency in the reporting of results. We will no longer ask for data on specific box type, but will only ask for the number of nesting attempts and the number of young fledged. We hope this shorter form will encourage a greater number of members to complete and submit the form, while at the same time reducing the errors and inconsistencies in its completion.

Acknowledgments

I would like to acknowledge NABS for providing funds for Denise Moore to compile the data from survey sheets. I would also like to thank my spouse, Nancy Niles, for reviewing this manuscript. ■

NABS Research Chairman
State University of New York
Cobleskill, NY 12043

Volunteer Needed for Nest Box Summary

NABS is seeking a volunteer to summarize results of the annual nest box survey and to prepare an article based on the data. The work involves tabulating all surveys submitted by groups and individuals. This is most easily and efficiently done with a computer spreadsheet or database. After tabulating the data, a summary is written for *Sialia*.

Any individual or group interested in taking over this project should contact Kevin Berner, SUNY, Cobleskill, NY 12043; e-mail: bernerkl@cobleskill.edu



Above: Ardent bluebirder Marcy Hoepfner, Metamora, Illinois, uses a scooter to check the 30 boxes on her trail. Her husband, Don, made three signs for the basket so there's no mistaking who's coming or going down the road. Below: The Hoepfners also own a golf cart dubbed the "Bluebird Buggy." Golden retriever Amber-Glo waits for her daily ride.

The How-To of Building Membership

Bill and Joan Davis

While the stated purpose of The Ohio Bluebird Society is clearly the return and perpetuation of native cavity nesting species in Ohio, there is room to consider the rewarding purpose of building our membership. Through such growth, the OBS will be able to reach out to more and more dedicated birders with our cause. How to sign up members effectively is a matter of personal choice. However, we follow this comment with tips that we have found to be most convincing when proposing membership.

Where should we start? Well, there are as many places to start as there are devoted bluebirders out there. Some ideas do come to mind, though, with some thoughts we have gathered over our years of association with OBS. The very easiest contact is that person with whom you have shared your trail of nest boxes, the person who has displayed some interest in what you are doing and wants to imitate your actions. Give that person a pep talk and a membership enrollment form. (You do have the OBS trifold in your trail kit, don't you?) It may be that this little push is all that is needed to get him/her enrolled.

Another source is the patronage that appears at your festival, workshop, fair, or community talk on the Eastern Bluebird. Don't be shy in emphasizing the role OBS plays in the continuation of our native cavity nesting species. Tell them about the *Monitor* and its informative articles -- better yet, give them a copy. Ask for their enrollment, as a group or individually. Give them the old sales pitch on the benefits their membership will bring to the goal of research and grants for budding environmentalists.

This is an example of a good sales pitch for membership in OBS:

I'm certainly glad to hear that you have this interest in nature and bluebirds. We have an Ohio Bluebird Society that promotes the interest of the Eastern Bluebird and other native cavity nesting birds in Ohio. The OBS produces an interesting and informative newsletter four times a year. It is a not-for-profit organization comprised of people just like you and me. It funds research and scholarships through membership dues and donations. Dues are only \$10 annually (or give the student rate or senior rate, etc.) Would there be any reason why you wouldn't want to join us?

Another way to enroll interested participants is to offer them a special gift of one year's membership. We have tried this with schools, scout troops, and individual families and found the method is received warmly. In your circle of acquaintances, is there someone like this who could use a little gift of membership?

To the experienced bluebirder, these are the kinds of things you have most likely been doing in your efforts on behalf of OBS. Keep up the good work! The newcomer to OBS may be overwhelmed at the thought of building membership. But once you get started, get your feet wet, so to speak, it is just talking

about your hobby, your devotion to bluebirding. The natural progression, then, is to ask for your buddy to join you in your OBS association. ■

1642 Humphrey Ave.
Dayton, OH 45410

The above article is reprinted from Bluebird Monitor 11(5):10, the newsletter of the Ohio Bluebird Society.

Getting to Know...Bluebirds!

See the enclosed picture catalogue for information concerning the 36 page educator's packet produced by the NABS Education Committee. Designed to be used in grades four through six, the material can be adjusted for use with younger or older students.

Correction

Dr. Michael Losito, faculty member at SUNY-Cobleskill, was omitted from the list of Research Committee members in the spring 1997 issue. He served on the review committee granting the 1997 NABS Research Awards. We regret the error.



Photograph by Nancy Niles Berner

Kevin Berner (right) receives the Elon Eaton Memorial Award from Charlie Rouse, president of the Eaton Bird Society, at the annual meeting of the Federation of New York State Bird Clubs in Albany, New York. The award was made in recognition of exceptional research in the field of bluebird box design and habitat preferences. Kevin Berner is the chairman of the Research Committee for the North American Bluebird Society and the New York State Bluebird Society. The Eaton Award is given to a New York State resident for outstanding research on a species nesting in the state.

Exchange

This feature extracts items from the newsletters of cavity nester organizations and the periodic reports of groups with bluebird or cavity nester projects. Please be sure this editor or NABS is on your mailing list. We want to include your material!

COLORADO--*Colorado Bluebird News*, Winter 1996

March 1997 marked the fourth anniversary of The Bluebird Project. In those four years volunteers for the Division of Wildlife and the Denver Audubon Society have built and placed nearly 4,000 nest boxes. Box plans have been supplied to hundreds of individuals and to any number of scout troops and community groups.

Although progress on the 826 mile proposed Colorado Bluebird Trail is slow, it is progressing. The counties through which this statewide trail will pass are Sedgwick, Logan, Morgan, Weld, Larimer, Boulder, Gilpin, Jefferson, Park, Chaffee, Gunnison, Hinsdale, Mineral, Rio Grande, Archuleta, La Plata, San Juan, Ouray, Montrose, and Mesa. Volunteers from any of these counties would be welcomed.

In 1996, monitoring results were received from 79 trails. Boxes fledged 603 Mountain Bluebirds, 202 Western Bluebirds, and one Eastern Bluebird. Among the unusual occupants reported were Pygmy Nuthatches in one of Ken Lane's boxes. Western Flycatchers used nine of Dick Kasik's boxes in Ignacio.

--*The Bluebird Project*

GEORGIA--Announcement, April 1997

A bluebird fair was held on Saturday, 12 April 1997 in Stone Mountain. Bluebird information was featured, along with bluebird nesting boxes and arts and crafts.

--*Bluebirds Over Georgia*

IOWA--*WINGS...*, Winter 1997

The lead article, "To Feed, or Not to Feed?" is reprinted from *Bird Watcher's Digest*. It is a concise summary of the reasons why people feed birds. The reasons for feeding are many, but there are equally valid reasons, the author points out, for not feeding.

This year the eighth annual March for Parks sponsored by the National Parks and Conservation Association will again be held to celebrate Earth Day. The Johnson County effort on 19 April will benefit the Althea R. Sherman Project.

--*Johnson County Songbird Project*

MICHIGAN--*The Nestbox Network Newsletter*, September 1996

The newsletter for Michigan's Nestbox Network (NBN) is published approximately annually. In 1993, coordination of the NBN was transferred to the Research Department of the Kalamazoo Nature Center; the Michigan Department of Natural Resources (MDNR) continues to participate and fund administrative expenses (printing and mailing costs). Continued public support of the non-game tax check-off on the Michigan state tax form is essential for funding of this program.

In an effort to determine the "best" nesting box, a survey was developed. Forty participants from 27 countries named the widely used Michigan (or standard) box as the most successful design for a total of 66% of the respondents; 20% selected the Peterson box, and 13% the Duncan style (a modified Michigan box). The most successful boxes were all constructed of wood, 20% were painted (usually a light color with latex paint), 55% opened from the side, 20% from the front, and 21% from the top; 85% had entrances facing either south or east; and 60% had some kind of metal predator guard on the mounting pole. "The success rate of the boxes with these characteristics represented 257 box-years, with an average of 4.5 eggs laid during a first nesting (with 86% successful fledging) and 4.1 eggs laid for a second nesting (with

89% successful fledging)."

An extensive article about predators and other possible trail problems is reprinted from the initial issue.

Dick Wolinski provides the basics for attracting, housing, and understanding the colonial-nesting Purple Martin.

Rick Baetsen describes his decade-long effort to help cavity nesters; it began in 1986 when he helped erect 40 bluebird nest boxes. By 1991 the project included boxes for Eastern Bluebirds, American Kestrels, Wood Ducks, Barred Owls, and Northern Saw-whet Owls. This was begun to create a conservation activity for the Youth Conservation Corps enrollees at the Jordan River National Fish Hatchery near Alba, a field station of the U.S. Fish and Wildlife Service. The spring of 1987 brought bluebirds to about 40% of the boxes; Tree Swallows and Black-capped Chickadees occupied others. By 1991 the 88 boxes produced just over 200 bluebirds.

With information obtained from the Michigan and Minnesota nongame wildlife programs, boxes for other cavity nesters were constructed using rough-sawn cedar and hemlock from local sawmills. The Wood Duck boxes were placed along rivers and in swamps with about half occupied each year. The Barred Owl boxes, which were placed along the hardwood and conifer forest edges in the Jordan River Valley, were of limited success.

Forty Kestrel boxes were erected in 1987 in areas of active and abandoned farm fields. Most years, between five and eight boxes were occupied by kestrels. The author has learned a great deal about kestrels through observation at these boxes. He has concluded that their nesting preference is for fields with short grass such as active cattle pastures which may make obtaining grasshoppers (a major component of the summer diet) easier.

The latest expansion of the program has been to aid saw-whet owls. Two hundred and three boxes were placed along forest roads in the Jordan River State Forest near Alba, the Hiawatha National Forest near Whitefish Bay, and on the Seney National Wildlife Refuge near Seney. The boxes are part of a five-year study on the saw-whet's acceptance of nest boxes, breeding biology, and forest preferences for roosting, feeding, and breeding. The author is interested in hearing from people who have worked with boxes for saw-whets. Contact him at 01820 Country Club Road, Boyne Falls, MI 49713.

Del Sheppard of Manistique attests to the strength of the Zuern tree branch box in resisting bear attacks. In June 1995, a bear attacked one of Sheppard's tree branch boxes. After replacing the box and moving the nest and surviving nestlings to a new box, only one nestling fledged, but he feels a less sturdy box would not have enabled even one bluebird to fledge. In July of the same year, another of this box style was knocked from its post by a bear. This time the four Tree Swallow nestlings fledged after the box was re-installed.

--Michigan Nestbox Network

MINNESOTA--BLUEBIRD NEWS, February 1997

A family of four bluebirds was present during early January at the Richardson Nature Center in Bloomington. The birds were seen on 7, 8, and 9 January during the middle of the day, when the temperature varied from 28°F to -14°F. The birds were drinking from a small feeder pond with a circulation pump in it. On 13 January a bluebird feeder with raisins, mealworms, and cat food was put out; unfortunately, the birds had disappeared.

Dave Ahlgren produced 500 Peterson box kits and oversaw the assembly lines for the second annual Burger Bros. Outdoor Day on 1 February at the Minneapolis Convention Center. Thousands of people crowded in for bluebird kits and 2,000 Wood Duck box kits donated by Burger Bros.

Among the list of monitors who have been consistent reporters to the Bluebird Recovery Program (BBRP), five people were noted as having submitted annual reports for a minimum of 15 years: William Dvorak, Alfred Jensen, Milt Sather, Jim Schram, and Dorene Scriven.

LaVerne Williams lists a full schedule of spring workshops from 1 March to 4 May, a total of nine in Minnesota. Dick Hjort, who formerly chaired the workshop effort, provides some guidelines and encouragement for those who are considering putting on a program or workshop.

Pairing boxes where Tree Swallow populations are predominant has been advocated by BBRP for some years. Recently strong arguments against pairing have been advanced in Wisconsin. BBRP reiterates its position that *"pairing of nest boxes can have real advantages where Tree Swallow populations tend to exceed bluebird populations."* Jason Smith received a grant from BBRP to study the spacing preferences at nest-sites between bluebirds and Tree Swallows in Bemidji. His study concluded that Tree Swallows probably prefer 15 yard spacing; a 7 yard spacing would be successful between bluebirds and Tree Swallows and keep Tree Swallows from taking over a trail. Professor Raleigh Robertson, Biology Department, Queen's University, Ontario, Canada, has studied Tree Swallow nest box spacing for many years. Some of his comments are worth keeping in mind. "There are many factors...in analyzing the effects of 'pairing,' such as habitat, distance between boxes in a pair, overall nest box density in an area, etc. It is a fairly complex issue, which must be examined with a careful experimental approach, including appropriate controls.

"For expressing nesting success, it seems, as some of the BBRP information points out, that you need to consider a measure other than simply number fledged per box. *For a solitary species like Eastern Bluebirds, once you reach habitat saturation, increasing the number of boxes will not increase your number of pairs of bluebirds. So, if you add boxes beyond the habitat saturation point, you will effectively lower your success, as measured by fledging per box. A better measure would be fledglings per unit area, or perhaps [by length] of trail.*

"For Tree Swallows, which are quite colonial, at a certain spatial scale, the habitat saturation point is much higher. So by adding boxes, you will keep attracting Tree Swallows, to a much higher level. While this may be detrimental to bluebirds, I doubt it." Like many aspects of bluebirding, pairing is a complex issue.

Some notes from the 1996 reports included the following comments. Tim and Jeanne McCloskey, of Forest Lake, reported that a phoebe used one box. Clara Beedy, of Kingston, Oklahoma, had a Downy Woodpecker lay one egg in a clutch of four white bluebird eggs. Four bluebirds and one black and white baby hatched. David Hampton, Ontario, Canada, modified his PVC boxes by changing the round hole to an oval one. He got twice as many bluebirds as he had in his Peterson boxes; the previous year his Peterson boxes had six times more bluebird nests than his PVC boxes with the round holes. Dominic Sellner, of Sleepy Eye, put Vicks Vapo Rub® on the sides, inside the top, and at the vent holes of his boxes to stop gnats. It worked for him; he invites others to try it. Bluebirds nested successfully in a raised-roof box of David Klatt's in Faribault. It was only 50 feet from trees and brush, usually wren habitat. The editor adds a note that if blowflies are a problem, try slipping pine needles under the bluebird nest.

--The Bluebird Recovery Program

NEBRASKA --Bluebirds Across Nebraska Newsletter, Winter 1996-97

Steve Eno concludes his three part series on House Sparrows with "Trapping in a Bluebird Box." The two traps he uses in boxes are the Peterson trap, for that box, and the Gilbertson trap, for other box styles. Catching the male is particularly important because it is he who bonds to a box. Keith Radel, of Faribault, Minnesota, suggests

trapping sparrows between 10:00 a.m. and noon. According to him, this is the time of day the male is most likely to be on the nest.

Do not attempt to trap sparrows unless you are sure a sparrow has claimed a box. To remove a trapped sparrow, cover the entire box with a clear garbage bag. The sparrow will fly into the bag where it can be caught. This is better than attempting to reach into the box to grab the sparrow which is often able to elude one's grasp.

Pairing PVC boxes with wooden boxes can have an advantage in trapping sparrows. The sparrow will almost always choose the wooden box leaving the PVC box for bluebirds.

In addition to in-box traps, there are also ground traps for large scale sparrow control. The Have-A-Hart® trap is recommended over the Trio® trap because it is "repeatable" while the Trio trap has to be reset after each capture. Fall and winter are the best times for using ground traps. Bait the trap with millet, cracked corn, and/or white bread. Leaving a House Sparrow in the holding compartment of the trap also helps to draw others in. Keep food and water in the holding compartment and place a cover over that part of the trap to protect the decoys from the elements. Check frequently (at least daily) because other birds may be trapped which must be released.

The author does not recommend releasing captured sparrows in other areas as it is his view that this simply passes the problem on to someone else. Captured House Sparrows can be given to raptor rehabilitators who are always in need of food for the injured hawks and owls in their possession.

Curt Sommer notes that he has had good luck in protecting boxes from climbing predators by fastening a 40 inch piece of aluminum downspout to a 6 inch block attached to the bottom of the box. It is true that a large, determined raccoon may be able to climb a downspout, but neither the author nor any of his friends using this technique have had problems.

As of the 17 November 1996 meeting, Bluebirds Across Nebraska (BAN) had 369 members.

Jackie Howe completed compilation of the 1996 Nebraska Bluebird Directory providing complete information on all trails. The Directory has been compiled since 1989, but it is the last three years which have seen impressive increases in fledged bluebirds--a period that coincides with the formation of BAN. Numbers of bluebirds fledged rose from 3,015 in 1994, to 3,639 in 1995, to 4,992 in 1996.

Dwane Zimmerman reports that 20 individuals or family members have volunteered to be county coordinators in Nebraska. This is a fine start. The first county coordinator workshop was held in Otoe County on 1 March 1997.

Cecelia Antholz, of Elk Creek, had one cowbird egg laid in a Peterson box. She also had a Red-headed Woodpecker raise two young in a slot box. Jim McLochlin, of Omaha, fledged six chickadees in addition to 130 bluebirds. He also found two cowbird eggs in one of the 15 boxes on a Douglas County trail. John Holm, of Gothenburg, reports an explosion of Tree Swallows with his bluebird count down for the second year. He plans the following changes: 1) pair nest boxes 10-20 feet apart; 2) use more Peterson and slot entrance boxes; and 3) increase the distance between pairs of boxes to 175 yards, since he rarely sees bluebirds nesting closer than that. Gordon Hopp, of Unadilla, had a banner bluebird year in 1996. His 132 boxes fledged 220 bluebirds. His occupancy percentages were as follows: 83 Peterson boxes had 71% occupancy; 14 PVC boxes had 50%; and 35 NABS boxes 46%.

--Bluebirds Across Nebraska

NEW YORK--Bluebird News, Winter '97

In an attempt to broaden interest in other cavity-nesting birds, an article by Lawrence Zeleny is reprinted, "Crested Flycatchers Need Help, Too." A page of "Flycatcher Facts"

is also provided to help New York bluebirders understand the needs of Great Crested Flycatchers.

The New York State Bluebird Society (NYSBS) was the recipient of \$2,500 from the Barefoot Grass Lawn Service division of Lawnmark. This was not a gift. It was part of a consent order settlement with the New York State Department of Environmental Conservation. The agreement required the company to furnish material or services in the stated amount to support NYSBS activities in Albany County.

Among possible uses for these funds are the creation of new NYSBS brochures, purchase of bluebird education packets for elementary and middle schools in Albany County, purchase of bluebird slide sets and videos for the Albany BOCES Center, purchase of a new bluebird display board for shows, and purchase of bluebird nest boxes to be placed on the Route 20 Bluebird Research Trail and in other rural areas of Albany County.

--New York State Bluebird Society

NORTH CAROLINA--BLUEBIRD NOTES, December 1996-February 1997

The North Carolina Bluebird Society (NCBS) approved a grant of \$100 to replace bluebird boxes and poles at Cedarock Park. It was the first grant made from the educational fund generated primarily by donations for boxes Dick Pockmire produced. A second grant underwrote the cost of box kits at a meeting in Moore County in October 1996. The third grant refurbished a bluebird trail at Tanglewood Park in Clemmons.

The 1996 summary is included in this issue. Reports covered 1,399 boxes; 4,376 bluebirds were hatched from 5,215 eggs and 4,218 fledged. Eight people experimented with Peterson boxes, most with the traditional oval hole. Of the 32 boxes 24 were occupied, 111 eggs laid, 103 eggs hatched and 103 bluebirds fledged. An additional five Peterson boxes with round holes were used. Unfortunately, nesting data were incomplete. Two of the eight experimenters complained of eggs rolling out when the front was opened. At least one intends to hinge the top.

Active members as of 27 January 1997 total 397.

NCBS has a web page. Check it at the following address:
www.pagesz.net/~lhoyt/ncbs.p1

Jack Finch writes about "Winter Food for Bluebirds." He has long promoted feeding dogwood berries to bluebirds. A light crop of berries and several storms reduced the berry supply. When that set of circumstances is present, he suggests mixing raisins and/or currants with the dogwood berries to help train the birds to eat the other fruit when dogwood berries are not available. Mealworms can be used as a supplemental food, especially during the early spring when insects are scarce. He asks 17 questions of NCBS members so that material can later be presented to members. The names and addresses of suppliers is a beginning, but he has numerous other questions including what is the best temperature at which to hold mealworms, can surplus mealworms be frozen, will birds take the frozen mealworms, are adequate instructions included by the supplier, etc.

--North Carolina Bluebird Society

OHIO--Bluebird Monitor, Spring 1997

President Doug LeVasseur highlights the fact that 1997 is the Ohio Bluebird Society's (OBS) tenth anniversary. The tenth annual meeting will be a special one. It is planned for 18 October 1997 at the Hamilton-Williams Campus Center at Ohio Wesleyan University. This year there will be a special effort to look to the past, especially to honor founders Reid and Theresa Caldwell and OBS charter members. Ohio Bluebird Pioneers will also be recognized. As a way of looking to the future, life memberships have been instituted.

To date seven people have joined this category. Anyone obtaining a life membership in 1997 will become a charter life member.

March was a busy month with five workshops and festivals scheduled in various parts of the state.

At the end of 1994, Joe Huber moved to Florida and retired from active bluebirding. In May 1996 he returned to Ohio on a visit and helped solve a sparrow problem in the box of some friends. It took him only a short time to trap the male House Sparrow and bluebirds went on to nest. He added the following comments: "When both sparrows see you fooling with the box that has their nest it is generally the male that enters first. When you remove the sparrow nest and the female was nearby to see you do it, she may be a little spooked about entering an empty box where her nest once was. The male then comes to the box and enters as if to show her its O.K. If neither sparrow was nearby to see you at the box, then either one may return and start right into the box without looking. If sparrows are a problem with you at your nest box, it's very clear to me that proper trapping will end the problem. I've never seen a situation involving sparrows that couldn't be overcome. My theory has always been start trapping early and continue up to July if needed. The bluebirds will come."

Wayne Davis in his "Notes from Kentucky" says that he had a couple of extremely messy bluebird nests in 1996. This was an unusual experience for him, but he remembered that years ago the late Harry Krueger of Texas wrote about how messy bluebirds in his area were. When visiting northern Minnesota Krueger found, to his surprise, that nests in that area were very clean. Currently, there is no explanation for this geographic difference in nest behavior. Davis also notes that when bluebird boxes deteriorate the roof is usually the first piece to come off. To prevent this he fastens the roof to the rest of the box by driving nails at a slant--and slants them in opposite directions.

Davis has recently been building boxes for Eastern Screech-Owls. They take to nest boxes quite easily. The negative aspect is that the 3 inch entrance hole means that European Starlings are a problem. Davis recommends getting boxes well into woods, away from the edges to reduce starling competition. Some dry leaves in the bottom of the box provide a base for the eggs; the owls do not build a nest.

The first OBS Trail Registration-Nest Box Survey came to a successful conclusion with participants registering 114 trails. There were 3,601 boxes on these trails that produced 7,668 bluebird eggs, 6,252 eggs hatched, and 5,581 bluebirds fledged. The largest trails were the most likely to produce a variety of cavity nesters. Dick Tuttle's trail of 263 nest boxes in Delaware County produced 289 Eastern Bluebirds and 711 Tree Swallows.

Bob Orthwein discusses "Making the Huber Trap More Effective." It is often difficult early in the season, before House Sparrows have begun nest building, to trap the male sparrow. It is during this period that other cavity nesters are likely to be trapped or may end up being killed by the male House Sparrow. Jim Heiser, an Ohio bluebirder, sets his trap and then puts a few pieces of dried grass in the box positioning the grass in the entrance hole so it can be easily seen by the House Sparrow. When the male sparrow sees the protruding grass, he reacts as if another male House Sparrow is trying to take over "his" box. He is caught when he enters the box to investigate. The photograph accompanying this article also shows the technique of taping a white feather to the outside of the box through the entrance hole as sparrows are attracted to white chicken feathers. Be sure to check boxes with traps at least every hour.

The OBS is encouraging its county coordinators and individual members to contact golf course managers to set up bluebird trails. The Board of Trustees collected information from Bluebirds Across Nebraska and other sources. William Davis will soon be mailing information to all county coordinators to launch this effort.

Dean Sheldon, Jr.'s "Ohio Blue Tip" column focuses on patience. This is an especially necessary quality for new trail monitors who normally anticipate putting out a trail and fledging large numbers of bluebirds. There may be a conspicuous lack of bluebirds on a new trail as well as sparrow and other predator problems. Deal with predators, learn all you can about bluebirding, and have patience. Success should eventually follow.

--Ohio Bluebird Society

OKLAHOMA--*Watchable Wildlife NEWS*, Winter 1996

In 1996 Dr. John Skeen, of the Oklahoma Department of Wildlife Conservation, was in charge of the management and monitoring of the Red-cockaded Woodpecker population on the McCurtain County Wilderness Area.

Biologist Norman Murray encourages people with chimneys to allow Chimney Swifts to raise young if a chimney is chosen. The nests are small and never "clog" a chimney. When young birds are heard in the chimney, they are within a few weeks of fledging. The noise is a small price to pay to assist these attractive insect eaters.

--Oklahoma Department of Wildlife Conservation

ONTARIO--*Ontario Eastern Bluebird Society 1997 Spring Newsletter*

The House Sparrow is featured in several articles. Don Wills uses in-box traps with great success. An article from the 22 May 1918 edition of the *Christian Herald* makes plain that the species was a major problem almost three-quarters of a century ago. The final paragraph is of particular interest to bluebirders.

"The Federal Government has issued a pamphlet covering the whole history of the English sparrow, his habits, his uselessness, and the ways to be rid of him. It tells how to trap the birds and how to make sparrow pie, pie being the only place in which the sparrow is of any use to men."

Each year there are a few sightings of overwintering bluebirds in warmer parts of Ontario. Don Mills reported a flock of 12 feeding on sumac near Carluke, last reported 25 February. Audrey Heagy reported one Eastern Bluebird with a flock of Red-winged Blackbirds near Port Rowen in mid-January. John Barker of the Toronto Raptor Watch reported 407 bluebirds migrating past High Park in the fall of 1996 with a peak of 68 on 14 October, somewhat early considering the mild fall.

William Read has recently analyzed the 1989-1995 fledged young and pair information to arrive at a figure that represents the number of fledged young per pair per breeding season. Over the seven year period, 4,861 pairs produced 19,699 fledged young or 4.05 young per pair. On the next survey he will use 4.05 as the figure for fledged young per pair per nesting season if pair information is not included by respondents.

Read also cites a recent study published in the *Journal of Field Ornithology*: "The effect of blowfly parasitism on nestling Eastern Bluebird development." K. Wittman and R.C. Beason. 63(3). Blowfly parasitism of nesting Eastern Bluebirds was studied in 325 nest boxes in western New York from 1986-1988. The authors found no difference in mass or in wing, tail, or tarsus length between parasitized and nonparasitized nestlings, nor was there any difference in fledging age. Survival to fledging did not appear to be adversely affected by parasitism.

In analyzing the presumed number one cause of lost eggs or nestlings as recorded on 1987, 1989-1995 nest box surveys, weather is recorded as the number one cause five years out of eight. Blowflies as a presumed cause of lost eggs and nestlings have dropped to "almost zero" in 1995. Raccoon predation is the major cause of loss that could be most dramatically altered if all boxes were protected by predator guards on the mounting posts.

George Coker has produced nest boxes for the group. Proceeds and donations help to

pay for special educational materials for the members. Enclosed in the newsletter is the booklet "Enjoying Purple Martins More: The Martin Landlord's Handbook" published by *Bird Watcher's Digest*.

--Ontario Eastern Bluebird Society

TEXAS--*Chaetura*, Spring 1997

Although many individuals have expressed interest in Chimney Swift towers, some people do not feel they have the resources or ability to construct one. Another way to help the swifts is simply to uncap your chimney. In many cases a chimney is superior to anything that could be built. Do, however, cap *metal* chimneys as they can be death traps for wildlife.

Several additional medium-sized towers were erected in high-visibility areas in 1996. One is at the Texas Parks and Wildlife Department headquarters in Austin; another is adjacent to the interpretive center at Huntsville State Park north of Houston; and a third is at the facility of the Alabama Wildlife Rescue Service in Oak Mountain State Park near Birmingham, Alabama. All of the above towers are accompanied by visual displays. Displays are available at cost from the Driftwood Wildlife Association.

Some contributors are committed to using only recycled materials in the construction of Chimney Swift housing. Raymond Usener of Fredericksburg used the casings of old water heaters. The tanks were removed, the insulation covered with burlap and chicken wire and replaced in the metal jackets. Two tanks were joined, legs were added, and the tower was stood upright. Other contributors visited salvage yards to purchase building materials.

Aesthetics were also considered. Ideas included towers shaped like lighthouses and totem poles. Another possibility was to make masonry driveway entrance columns and fence columns hollow and open on top to accommodate swifts.

Some non-traditional sites where swifts were reported nesting included broken water cisterns, abandoned buildings, tall columnar shopping center signs, and a masonry bar-b-que pit.

Jack Freeman, of Springer, Oklahoma, goes to great lengths to aid this species. During the intense heat of the summer of 1996, he installed a small fan in the bottom of his tower to help cool the birds. His current project is a rain deflector to be installed inside the tower just above the nest location. It must be large enough to channel water on the wall away from the nest without being too large for the young to be able to climb over. Because he enjoys the sounds made by the swifts, Freeman has installed an intercom in the tower so he can hear the notes.

Design modification and experimental towers are being erected at a number of sites, and some are being used by swifts. Nest failures sometimes provide clues for needed design changes. Since darkness is important for swifts, a sun shade on the southern top edge may reduce heat buildup as well as darken the interior. Interiors should be darkened, though paint over the plywood might be harmful to the birds. Lightly charring the wood with a propane torch could be a solution.

A series of questions that are frequently asked about Chimney Swifts included this one: "I hear a lot of birds in my chimney. How many nests are in there? Probably only one! Although Chimney Swifts will congregate in large flocks (sometimes hundreds or even thousands), they are solitary nesters. A pair will vigorously defend a nest site. However, they do allow a few 'helpers' to join them after the nesting has begun. These extra birds are most commonly birds which were hatched there the previous year. Three or four hungry baby Chimney Swifts can sound like a dozen. It is dark in a chimney, and the young birds rely on their impressive voices to 'remind' their parents where they are."

--North American Chimney Swift Nest Site Research Project

WISCONSIN--Wisconsin Bluebird, Winter 1996

The major article in this issue is "Pairing--Good or Bad for Bluebird Production? Bad!" by Joe O'Halloran who is the chairman of the Data Analysis Committee Bluebird Restoration Association of Wisconsin (BRAW). Monitors filling out 1996 survey forms were asked to indicate if boxes were paired or singles. More than 90% of those responding provided the requested information. For purposes of this analysis, a box was considered paired if it was within 100 feet of another box. The data base of 4,600 boxes showed basically the same results that smaller sample sizes had.

With box pairing, the bluebirds fledged per box numbers dropped to about half, and the Tree Swallows fledged per box increased by about a fourth, when compared to single box production. "Moreover, the 1996 BRAW data clearly suggests that in your area of Wisconsin, if you did not produce an excess of Tree Swallows using singles, you probably would produce an excess of Tree Swallows using paired-boxes. The BRAW data also clearly suggests that in your area of Wisconsin, if you started out by producing an excess of Tree Swallows using singles, your situation would have gotten even worse by pairing, and much worse if you use Hill Lake boxes."

The author thanks Wisconsin monitors for carefully monitoring so actual numbers fledged from paired boxes could be compared. "And these actual bird production numbers clearly showed (a) that pairing did not enhance bluebird production, and in fact dropped it, and (b) that pairing caused Tree Swallow production to overrun bluebird production.

"And, the production results say to me that if more bluebird production is wanted, single box trail-management is the choice that will do it, and that box pairing is the choice that will work against it.

"Interestingly, one BRAW monitor, Mary Hellebeck, the Secretary of BRAW, reported that last spring she had converted her paired-box trail into a singles box trail for the 1996 season. She said she did this by simply using a plug in the box-opening to close one box in each pair. As a result, 66 percent more bluebirds were produced with only half the number of boxes 'open' in 1996, compared to 1995. In 1996, with only the 22 single boxes, 20 bluebirds and 83 Tree Swallows were produced. (*About one bluebird per box was the Wisconsin average bluebird production.*) In 1995, with 46 paired boxes, 12 bluebirds and 94 Tree Swallows were produced. In both years, the trail had the same number of box-sites, and the box-sites were at exactly the same locations. When paired, the trail produced Tree Swallows and bluebirds at a TSfledge/BBfledge ratio of 7.8 Tree Swallows fledged per bluebird fledged. When 'unpaired' the same trail produced at a ratio of only 4.15. Not a total cure, but a big improvement, and a 55 percent increase in bluebird production when Mary switched from paired-box to singles-box trail management."

Donald Schomburg, of Sheboygan Falls, noted that for the last three years he has had a pair of Rough-winged Swallows nesting in a six-inch galvanized pipe in his garage. He says he leaves two windows partly open at the top to allow them to enter and exit the garage.

--Bluebird Restoration Association of Wisconsin

NEWSLETTER EDITORS AND AUTHORS, please note the following concerning House Sparrow and other bird names. The American Ornithologists' Union is the body responsible for establishing all scientific as well as English bird names for North American species. The correct vernacular name for *Passer domesticus* is House Sparrow, NOT English Sparrow. At one time the names were used interchangeably; that has not been the case for many years. The only time English Sparrow should be used is when it is a direct quotation from published material. See the 1918 quotation under Ontario

in "Exchange" on page 108 of this issue as an example.

The generic word bluebird is not capitalized. Bird names are capitalized only when the entire common name is used, i.e. Eastern Bluebird, Mountain Bluebird, Brown-headed Nuthatch, Northern Mockingbird; generic names such as bluebird, nuthatch, and mockingbird are not. Although a few name changes are made every half dozen years or so, most names remain constant for decades. It is possible to keep up with correct current names through professional ornithological journals as well as through local bird groups, library references, and national birding organizations.

--J. Solem, Editor

Tree Branch Box Update

Frank Zuern

Since the diagrams for this nest box were published in *Sialia* 16(1):13-19, the box has been used in many areas and numerous comments have resulted in optional improvements to the original design. The two shown here are a removable predator baffle designed by Svante Humbla and a construction change to allow the box to be opened from the side, rather than from the rear.

Removable Predator Baffle--The predator baffle for the Tree Branch Bluebird Box can be made removable for cleaning or inspecting the contents of the box (Figure 1). Fasten in two wood dowel rods, each one 1/4 inches (0.6 cm) in diameter by 1 1/2 in. (3.8 cm) in length. Glue in place (A). Countersink two holes in the floor to receive the ends of the dowels; allow for clearance. Fasten in place through both sides of the nest box using galvanized nails or screws (B). Use this option with the rear-opening box. Make fasteners (B) removable. Note: Install the dowel rods 1 in. (2.5 cm) into the baffle and let them protrude 1/2 in. (1.3 cm) to fit the holes drilled into the floor. Dimensions of Figure 1 are L-3 3/8 in. (8.6 cm); W-3/4 in. (1.9 cm); H-2 1/2 in. (6.4 cm).

Side-opening Option--The original design has a back door access. That design slows the removal of old nest

material. It also limits the opportunity for photography, may impede those who are banding nestlings, and is awkward for people with large hands. The overwhelming advantage of a rear door is that it makes for an efficient House Sparrow trap. Once the sparrow is trapped and the entry plugged, the bird cannot escape when you reach in from the back. **Editor's Note:** The Technical Advisory Committee warns that monitors may be bitten by a mouse, snake, or other inhabitant because it is difficult to see inside the box from the rear.

To convert this box to a side-opening style, start by fastening the predator baffle in a fixed position with nails or screws. Come through the floor and the opposite side. This strengthens the nest box. Next, place two 3 in. (7.6 cm) strap hinges at the bottom corners of one side (A). To close and secure, place screws at the two upper corners (B). Or use two spring-loaded eye bolts (screen door hooks with a safety latch). You may prefer using two galvanized nails placed at a slant. For extra security, *please* place a screw through the movable side at C into the predator baffle. Allow about 3/8 in. (1.0 cm) clearance along the top.

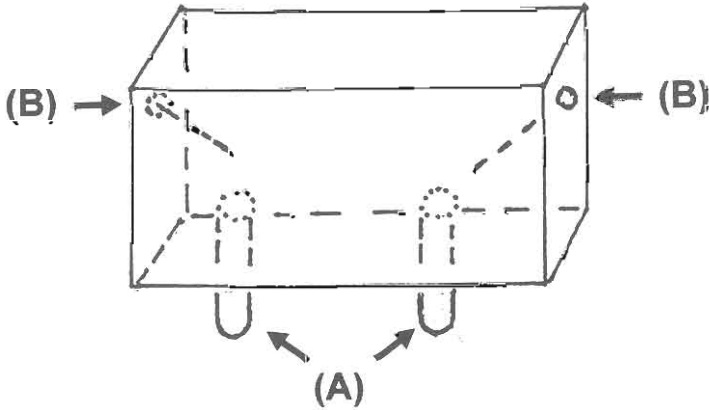
The side-opening style is easier to clean than the rear-opening type and the entire box can be easily inspected. If you

have large hands, you will no longer scrape them on the inside of the box. The possibility for premature fledging may exist and it is more difficult to trap and remove House Sparrows from a side-opening box. When trapping sparrows in

this style box, place a clear plastic bag over the entire box to prevent the sparrow's escape. ■

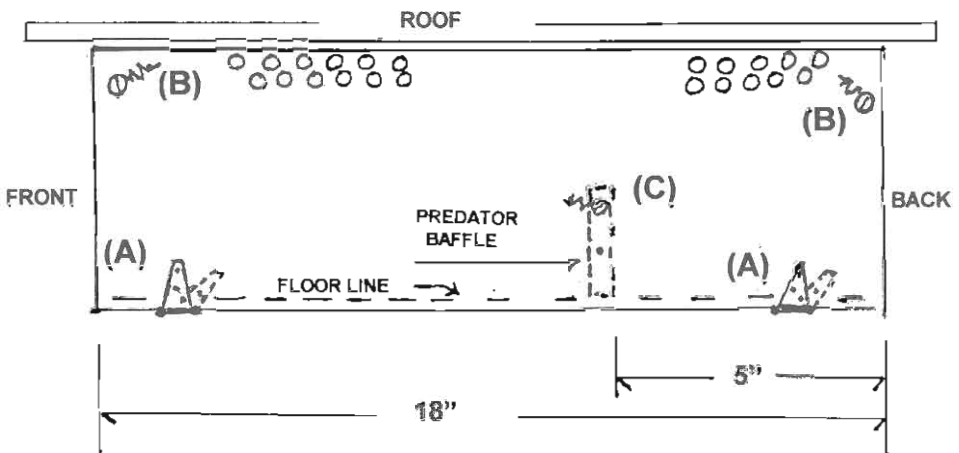
1040 Maricopa Dr.
Oshkosh, WI 54904

Figure 1. Removable Predator Baffle



Designed by Svante Humbla; diagram by Frank Zuern

Figure 2. Side-opening Option



To obtain information about a sparrow trap designed for this box style, contact the author by sending him a stamped, self-addressed envelope or postcard.

Mommy's Bluebirds

Frederick C. Harwood

In November 1971, the Rudolf Steiner School in Great Barrington held a fundraiser. Because our daughter Kim attended kindergarten there, we went to look over the many items for sale. Stimulated by visions of a colorful blue bird, "Mommy" purchased a bluebird house kit. In late January, when the snow lay deep, Mommy and Kim remembered the kit.

In some excitement, they came with the instructions in hand to ask me to put up the house. Apparently the instructions said that the bluebirds would choose their nesting spot in February. I chuckled, sure that no self-respecting bluebird, a thrush like the robin, would hazard the deep snow and bone-chilling cold just to adopt a thin little plywood box tacked to a post jutting out of a three-foot deep snowdrift.

Before the week was out, Mommy and Kim had taken matters into their own hands. Mommy assembled the box, found a spindly bit of a stick, blistered a finger nailing the box to the stick, and angrily jammed the stick through the crust of the snow 50 feet from the house to the edge of our hill overlooking Long Pond. Following the instructions, she took care to orient the opening to the south and to mount the box about five feet above the ground. From the living room window Kim and I peered out at the little box. Just before I opened my mouth to predict disaster, I noticed Kim's expectant look. I just bit my tongue.

About the end of the first week of February I was again by the living room windows contemplating winter's progress. As I lifted my steaming mug of coffee, peering over the top to the cold grey hills of Monument Mountain, something brilliantly blue flashed past and landed on the bluebird box. I shouted and everyone came running. As we

gaped, a less-brilliant female swooped in to land beside her mate. My mate gave me her "So there, smarty," look. Kim laughed.

Chastised, that weekend I found a proper post and chiseled a hole in the frozen ground. No sooner had I remounted the bird box than the pair returned, positively bouncy and poking into and about the box. After prolonged discussion in their quiet whistling voices and wing signals, they claimed it.

That year that pair raised broods of five, four, and four young bluebirds. By October, 15 very active bluebirds claimed the yard. In the morning they would gather on a nearby large rock, bathe in its dew pools, and plan their day. In the evening they would swoop down in small groups, landing on the bird box house or clinging sideways on the post. At times, the gregarious birds chased each other about the lawn and trees behind the box.

Every year since 1971 we have had bluebirds. At the most, Mommy has fostered 25 birds in a year with the help of another box on the other side of the hill (they don't like to be too close). Occasionally, an entire summer's efforts would be lost to numerous hazards such as blowfly larvae, raccoons, starlings, Tree Swallows, wrens, House Sparrows, and the mysterious disappearances of one or more parents. For some reason, we think heartbreak; if either parent fails, the other loses interest.

The most disappointing thing has been to open the box (bluebirds are virtually immune to human curiosity) and find all the eggs pipped or the just-hatched young dead--cold and sprawled about the disturbed nest. Still, they have thrived here on this knoll.

The second year we reported Mommy's success to the Pleasant Valley

Sanctuary in Lenox. They were very interested and began a bluebird trail map with pins stuck in wherever bluebirds were reported. For a few years, Mommy's little bluebird box between Alford and Great Barrington showed up on that map as a wellspring of pins. The Audubon group designated her house "1 A" on the map and put a corresponding label on the box. By the late 1970's, other areas were reporting many nesting pairs and the map sported clusters of colorful pins throughout south county (the local name for the southern part of Berkshire County).

We have had bluebirds in every month of the year, but not every month of every year. They always return in February, coming and going on good and bad days, respectively. After a short honeymoon, in April they build the first nest in two days.

With the 1980's came the bluebird survey form mailed each year by the Audubon Society. Earlier, a bird fancier from Simon's Rock had made regular tours among the proliferating boxes in south county. Last year we thought banding might add to bluebird studies, and called the sanctuary. Unfortunately,

after carefully banding and inspecting the young birds, that evening something discovered and killed them all.

Fortunately, the parents are intent on raising young bluebirds. If a nest should fail, or even after the young have flown, Mommy, screwdriver in hand, opens and cleans out the box. The empty box stimulates the parents into another short honeymoon. Soon, the female begins another nest, plucking dry grass from the lawn. Within a few days, with the bright-blue male encouraging her with his soft whistles and wing flutters, she will set up a new household.

Every morning from early February through October we look out our bedroom window at the bluebird box and are usually rewarded. This year they arrived on February first. While working in the yard or just relaxing on the deck, we watch and listen for them as they go about their happy lives. In summer, the sound of their soft morning whistles coming in the open bedroom window is a fantastic way to start the day. ■

AIER Division St.
Great Barrington, MA 01230

The Bluebird Boy

Wendy Beaver

In March of 1994, my sons and I set out to clean 50 bluebird boxes at Ives Run, the local park run by the U.S. Army Corps of Engineers. That day in the pouring rain, Jonathan, my eight year old son, began a romance with bluebirds that will, I believe, last his whole life. In his enthusiasm, he learned all that he could about bluebirds and began to educate anyone who would listen.

One of the teachers at Jonathan's school spoke to her husband, a supervisor with the Corps. After clearing it with me, he called Jonathan and

offered him the chance to manage the bluebird conservation project for the park. The project consisted of cleaning, surveying, and maintaining 96 bluebird boxes on seven trails.

By the end of that summer, Jonathan had built his first display and given his first public lecture on bluebirding at the park. He had also remapped some of the trails and detected a problem with one of them. On his recommendation, the moving of the trail was placed on the docket for Volunteer Day, a community work day at the park. Jonathan was

placed in charge of 13 Boy Scouts and their leaders, who helped him move the trail to its new location.

During the winter and early spring of 1996, one of the trails sustained heavy damage from ice and high water. With the help of the Corps, Jonathan moved and repaired the trail while carrying out his other duties. By the end of the summer, he was confident enough to fill out the *Nest Box Use Summary* by himself that the Corps would submit to the Pennsylvania Game Commission.

In September, he gave his second public presentation at the park, this time adding a short survey walk to teach people to monitor their own bluebird boxes. At Volunteer Day, he supervised the building of 34 new bluebird boxes for use in 1997.

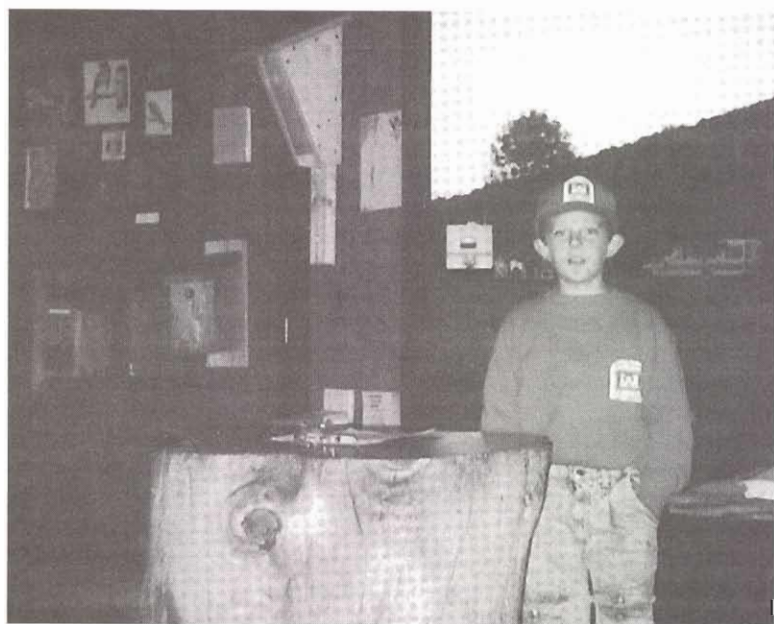
Jonathan's efforts have earned him the Tioga County Volunteer of the Year title and also Baltimore District Volunteer of the Year for 1995. The awards were made at the close of Ives Run Volunteer Day on 7 September 1996.

I still drive the car on survey trips, but Jonathan no longer needs my help on the trails. He is currently teaching a neighbor, a friend, and Ben, his little brother, the ropes just as we once learned them. We enjoy sharing our days with the deer, squirrels, Osprey and Bald Eagles, as well as many other of nature's creatures.

My bookshelves are lined with bluebird memorabilia and my walls with bluebird pictures. Our trophy collection includes a 4-H blue ribbon for a presentation given on, you guessed it, bluebirds. I have grown used to having people stop me on the street to ask, "Isn't that the 'Bluebird Boy'?"

It is early March now, and Jonathan, along with his friends, has already carried out our yearly spring box cleanout. I look at him, a hearty boy of ten, and wonder what our life would be like without his bluebirds. The answer: very empty, I believe. ■

RR#2 Box 77D
Middlebury Center, PA 16935



Photograph by Wendy Beaver

Jonathan Beaver, Middlebury Center, Pennsylvania, with display he created for his first public program in the summer of 1995. The park is run by the U.S. Army Corps of Engineers.

BLUEBIRD EXPRESS

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



Dear Editor:

I am a science teacher at North Harford Middle School. In the past we have done a lot of work with our kids on bluebirds. We made 150 nest boxes to be set up at Aberdeen Proving Ground to start a bluebird trail and have established a trail around our school grounds. We also work with the kids to help spread the word about these birds and how to help them.

Edward Goetz
North Harford Middle School
112 Pylesville Rd.
Pylesville, MD 21132

Dear Editor:

There are seldom articles or reports in *Sialia* from the Far West. Since the passing of Hu[bert] Prescott, their absence is even more noticeable. I suppose that people out this way just feel a little distant from the East.

Back in 1980 the Western Bluebird had almost disappeared from Washington State west of the Cascade Mountains. A recovery program was begun on the Fort Lewis military reservation, where a very few pairs were still holding out. It was a cooperative effort, with Fort Lewis providing building materials and *habitat*, Audubon Society members constructing nest boxes, and a resource manager from the Nisqually Indian Tribe installing,

monitoring, and maintaining them.

This project rapidly became very successful in attracting *Sialia mexicana* back to its historical nesting range. Within a few years, about 400 nest boxes were in place in appropriate habitats scattered over a large area. In addition to all of this work, George Walter monitors and bands juveniles and occasionally females--over 4,000 banded so far. Considering the status of the species at the beginning, this is an astounding accomplishment.

Personally, I have maintained a modest trail over the past 10 years, where two or three pairs of Western Bluebirds nest along with Tree and Violet-green Swallows and House Wrens. It is hardly worth mentioning, and is actually a "spillover" from the Fort Lewis project.

Jack Davis
1230 98th Ln., SE
Olympia, WA 98501

You are absolutely right! There are seldom articles or reports from the Far West in Sialia. This is not by choice, however. A very high percentage of members live east of the Mississippi River and/or within the breeding range of the Eastern Bluebird. It is natural that this large group of observers and monitors would produce the majority of articles. We welcome material from all parts of the continent and hope you will do what you can to encourage active

monitors to submit observations, research results, and trail experiences. The Far West is fortunate in having a variety of cavity nesters use nest boxes. Readers would be interested in learning more about some of these non-bluebird species. We look forward to receiving more articles from your area and other parts of the West.

Dear Editor:

I am, as always, delighted to renew my membership in the Society. As founder of the King's Charter Bluebird Trail, I have spent the past eight years creating a most successful trail in a densely populated suburban subdivision. On 9 April 1997, I will hold the eighth annual bluebird trail meeting for local residents. I will be giving a talk about bluebirds and their conservation, then show the new slide show, and finally hand out nest boxes that are built for free for interested residents. We have bluebirds on virtually every street in this neighborhood. They are among the most commonly seen birds locally.

David Alpert, M.D.
9203 Stephens Manor Dr.
Mechanicsville, VA 23116

Dear Editor:

I made approximately 45 bluebird houses last year. To date over 400. I also made about 25 bat houses. I read about eight books on bats and I did not realize the great importance of bats in relation to ecology.

During the Lake County Fair in Crown Point, Indiana, I had several bluebird boxes displayed at several booths. I also gave your advertising circulars to the people in charge of the booths to give them out to interested and responsible persons. Hopefully, you received

memberships as a result of that.

Joseph A. Kujanik
2249 Crest Rd.
Gary, IN 46408

(TALES--Continued from page 119)

The **Unitarian Universalist Church** of Columbia, Maryland, had its inaugural bluebirding season last year; it was proclaimed an "unqualified success." Noting that the House Sparrow is an aggressive enemy of native cavity-nesting birds such as the bluebird, and must be removed Valiant **Gene Berg** drew the assignment and (got rid of the sparrows).

The bluebird-loving *Birds and Blooms* magazine continues to stimulate mail about bluebird conservation. **Myra Hinson Nobles**, of Evergreen, North Carolina, was inspired, after reading a copy in a doctor's office, to tell us about her father's long-time bluebirding efforts. **Kermit Hinson** of Tabor City, North Carolina, took up bluebird nest box building only in his retirement with his wife decorating the boxes with floral designs. They place them in a roadside display, selling them by means of the "honor system" for \$3.50 to \$6.00 each. Others they use in their yard; they have fledged as many as 20 bluebirds, as well as chickadees, Tufted Titmice and nuthatches. The local newspaper recognized his efforts in a recent article titled: "San Francisco Had Its Birdman of Alcatraz; Now Tabor Has a Birdman." We're impressed, too, **Myra**, and THANK YOU for telling us!

But by now, dear reader, you are watching bluebird brood number one helping their parents feed siblings in brood number two, and as **Joe Hallow** of Potomac, Maryland, said: "I watched as they fledged one by one--and just feel they bring good fortune and happiness!" And may they do so for **YOU**, dear reader! ■

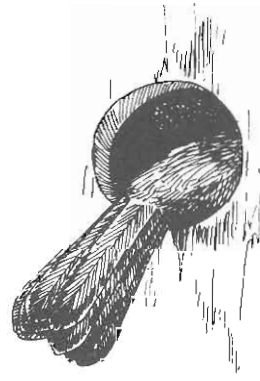
Bluebird Tales

Mary D. Janetatos

"You have five *what color* bluebird eggs in a bluebird nest box?" I asked the phone caller, veteran bluebirder, **L.R. Black**, who was calling from Holdenville, Oklahoma. He declared himself to be 85 years of age so surely must have known what he was looking at. "*Pink!*" he exclaimed incredulously. Baffled, I gave him NABS President **Charlotte Jernigan's** phone number in Wagoner, Oklahoma. I figured Charlotte would be able to solve the "Oklahoma question" and hurried to the dining room where a *Sialia*-stuffing crew, (which consisted of **Helen Tunstall**, **Barbara Wyckoff**, **Mary Shepherdson**, **Kathleen Mallon**, **Bernice Moses** and **Alice Saathoff**, all of Rossmoor Leisure World, Silver Spring, Maryland, was already hard at work. Retelling the mystifying tale, it dawned on several of us at the same time: the "pink" bluebird eggs had appeared on 1 April! Did a "fool"ish vandal swap the previous four *blue* bluebird eggs for five fake pink eggs? A later phone call to Charlotte revealed that she had concluded the same thing.... We felt it was *not* funny! The next day, our hard-working volunteer group included **Alice Hagerty**, **Heien Tunstall** (again!), **Maria Hoff**, **Harriet Shapiro** and **Lillian Warfield**. To ALL of them, THANK YOU!!

This year's spring saw Charlotte Jernigan facing the loss of her beloved husband, **Bill Jernigan**, on 3 March. It was last spring when we bade a sad farewell to NABS' founding treasurer, **Delos C. "Chuck" Dupree**, following his unexpected death on 6 May 1996. His devoted wife, **Betty**, of Elkridge, Maryland, still comes to NABS headquarters to help as a volunteer, and we reminisce about the days gone by--the challenging and fulfilling days when **Larry Zeleny**, NABS' founder, launched his vision of bluebird conservation.

That vision is advanced in many ways



by those with new ideas and ways of bluebirding. One ambitious idea came from **H. Coy Winter**, of Belleville, Illinois: "Let's have a "Cross-country Bluebird Trail"! If you wish to contact Mr. Winter, he can fill you in on the details. Call him at (618) 233-3298. In a reverse effort, the bluebirds assisted **Matt Roig**, 14, of Cheney, Washington, when he built and sold around 100 nesting boxes to help raise the \$1,000 necessary for a school trip to Washington, D.C. His mother, **Vickie**, wrote: "He'll be leaving for the capital just about the same time as the bluebirds arrive in our area to find plenty of new housing!" **Wayne Hesterly**, of Chappell Hill, Texas, thanked us for the reminder about his dues; poor health had occupied his mind. He described his bluebirding efforts: "The nesting boxes do the job--we've made over 3,000 (!!!) And still making a few--only a few. Health, etc., if you can send us some brochures we can pass them out during our spring Bluebonnet Festival and fall Scarecrow Festival." Wayne also sent along a tip on fire ants: when the birds begin to lay, "put a good glob of axle grease around the pole--it works!" Also renewing her NABS membership was **Helen Hess**, of Goshen, Ohio, who described their bluebird habitat as five acres of mowed lawn, with a few locust trees which the bluebirds like to use as perches. This year out of the five nest boxes, they selected one right close to their house, and peered in the dining room window, much to the envy of the naturalist at the Cincinnati Nature Center

when told of the close encounter of the "bluebird" kind.

This brought to mind the Black Hills Nature Center near the NABS headquarters. At the invitation of Park Naturalist **Denise Gibbs**, I presented the NABS slide program on 15 March. The receptive audience enjoyed the interactive aspect as NABS past president **Anne Sturm** and NABS charter member **Jack Davis** were able to localize the details of bluebirding in the more rural parts of Montgomery County, Maryland. **Jessica Tarpley**, also of the area and one of the younger set of bluebirders, was accompanied by her mother, **Pam**. Jessica's artistic expertise was admired, as she displayed her rendition of Larry Zeleny's popular photograph of NABS' mascot bluebirds: *Little Brother and Little Sister*. A persistently stiff breeze prevented the group from seeing the resident bluebirds; however, at the local Countryside Park, I have already seen bluebirds gearing up for this season. I know those nest boxes will be thoroughly monitored by my neighbor, **Mary Margaret Freeburn**.

Paul Delzer, Alden, New York, tried his first bluebirding last season, with such success that he wants to expand this season. This past February he was speculatively eyeing the Darien (New York) State Park. He wrote: "I think it would be a good place to set up houses because there is a lot of open space. I have the resources to build some houses, but I would need some posts and permission from the state to put them up." Go to it, Paul, and keep us posted! New member **Bruce Hall** from Bayfield, Colorado, cogitated on bluebirding this spring, and asked us to help him in educating some Boy Scouts about bluebirds. Using the NABS brochures we sent him, he planned to answer the important questions asked by beginning bluebirders. He wrote: "When you look at the slack-jawed delinquents down at the mall, its kind of fun encouraging a bunch of energetic kids to do something

positive." And Bruce's Boy Scouts could attract TWO bluebird species--Western and Mountain--in his corner of southwest Colorado.

We have had a number of inquiries both by telephone and e-mail from bluebirders with access to golf courses about the feasibility of placing nest boxes on the courses. NABS members **Richard** and **Paula Kerins**, of Middlesex, Pennsylvania, own and operate the *Tam-o-Shanter* Golf Course of Pennsylvania. They reported by telephone that they practice "integrated pest management," using a pulverized garlic spray (*no odor, honestly!*). They have over 50 bluebird nest boxes, successfully raising bluebirds in many of them. For more information, you might want to give them a call at (412) 981-7127, their golf course office number. The bluebirding season got off the ground in Morristown, Tennessee as teacher **Michael Jinks** sent a snapshot of a high school class, saying: "We make 50-100 boxes each year." They probably have a high degree of success, because Tennessee is one of those places in the United States where bluebirds can find much to favor their numbers, just *naturally*.

NABS Speakers' Bureau has *hundreds* of devoted bluebirders, so sometimes we get letters from persons inspired by one speaker or another. **Joe Anna Bolton** was one of these, who heard the bluebird talk given by **Mr. Gene Downs**, of Fincastle, Virginia, to the Big Spring Garden Club. Sending a donation to NABS from the club, she wrote: "Mr. Downs is an excellent representative for the bluebird and your society." And NABS is *very* grateful for his and ALL the speakers' efforts for the bluebirds! Another veteran bluebird speaker is **Lloyd Wilson**, of Godfrey, Illinois, who was listed as speaker at the *THINK BLUE* Special Event as an 18 year veteran! NABS historian **Shirley Adams**, of Alton, Illinois, credits Lloyd with helping her to get involved in bluebird conservation. She was already involved in dogs and parrots!

(Continued on page 117)

Bluebird Blues

Warm winds blow from south to north,
And with them birds do soar;
They bring to life a dormant land,
And quiet winter's roar.

The bluebird's song calls out so clear
Amidst the morning dew;
They've graced our yard, with colors
bright,
Their lovely coats of blue.

A nest they made and eggs are laid,
Her role--to incubate;
She proudly warms the promised lives,
They number half of eight.

She sat for only seven days,
And then away she flew;
She should have sat for fourteen days
To hatch her babies blue.

Her mate was hurt and so was I,
I really think it's true;
It was then I realized,
I've got those bluebird blues.

For ten full days we saw her not,
But how I did rejoice,
To see her with her mate once more;
There's no bluebird divorce.

A second time she built a nest,
And five eggs did she lay.
But promised life was quickly crushed;
The female flew away.

My sadness shown, a friend did say,
"There's something wrong with you."
There is no way to hide the fact,
My bluebird blues are true.

One early morn she did appear,
Now, to amend the harm?
With hope I had a happy thought,
The third time is a charm.

And so once more a nest she made,
And two eggs did she lay;
To my chagrin that little bird
Took wing and flew away.

Every day I look for them,
I guess for good they're gone;
No more will I hear this year,
Their lovely bluebird song.

Then again I've heard it said
There's something wrong with you;
I must admit I really have
Those awful bluebird blues.

--Edgar I. McDonough

(BOOSTERS--Continued from inside back cover)

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Judy Watson
Welcome Wagon Club
Roy L. Wellman
Jeannie Wright

Nestling

Jim & Lee Amigh
Jim & Ann Auer
Mrs. Rena H. Bishop
Kim Block
Allen C. Bourne
Judith Boyer
M.T. Brace
Barbara & Bill Buckley
Judith Burkhardt
Pauline Burkhardt
Mrs. Sara Capps
Rose Carvalho

Cherry Brook Garden Club
Richard & Nancy Cole Family
Robert & Jean Crane
George Elkins
Steve & Cheryl Eno
Mrs. Denise Eynon
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Martha A. Genzel
A. Hagerty
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Mr. & Mrs. W. John Soliday
Paul & Jamie Swank
Joseph Vanbuskirk
We Pia Gah Camp Fire
Mr. & Mrs. William Wing
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Katrina Renouf
Mrs. Irene S. Frantz
John H. Rogers
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Lawrence Zeleny
Dr. Eugene Majerowicz
Lillian Lund Files
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Kevin Joseph McCarthy
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Western Bluebird

Elizabeth Crispin

Mountain Bluebird

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Eastern Bluebird

Ann & Marty Bambrick
USPA/Don Beck
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Dr. Bruce Hall
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The Krusos Foundation
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Shirley Adams
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Pat Soehnen
Dr. & Mrs. Wayne Spiggle
Helen W. Swain

(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. Three year rates: Student and Senior \$28.50; Regular \$42.00. Add \$2.00 per year for Canada and Mexico and \$3.00 per year for other countries (surface mail). U.S. funds only, please. In Canada, please use Canadian postal money order in U.S. funds. Do not use checks. Amounts over \$6.00 are tax deductible.

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North American Bluebird Society
Box 6295
Silver Spring, MD 20916-6295
Telephone: 301-384-2798
Fax: 301-879-9650

