Sialia

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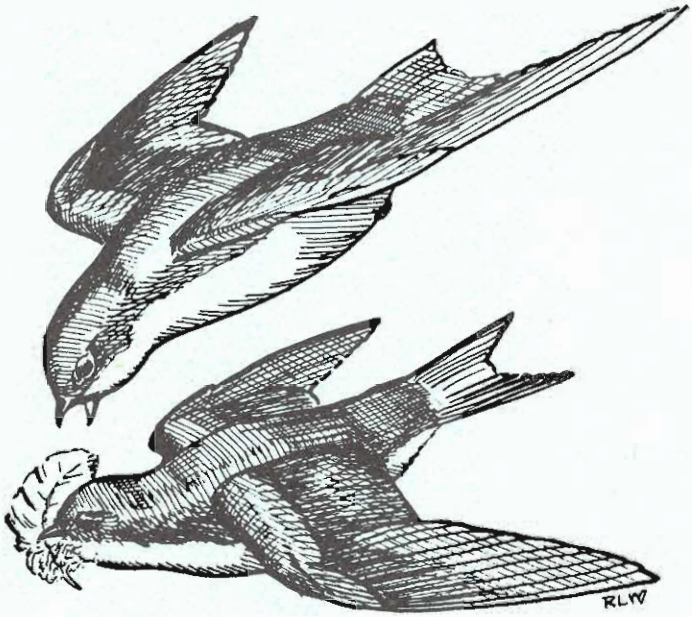

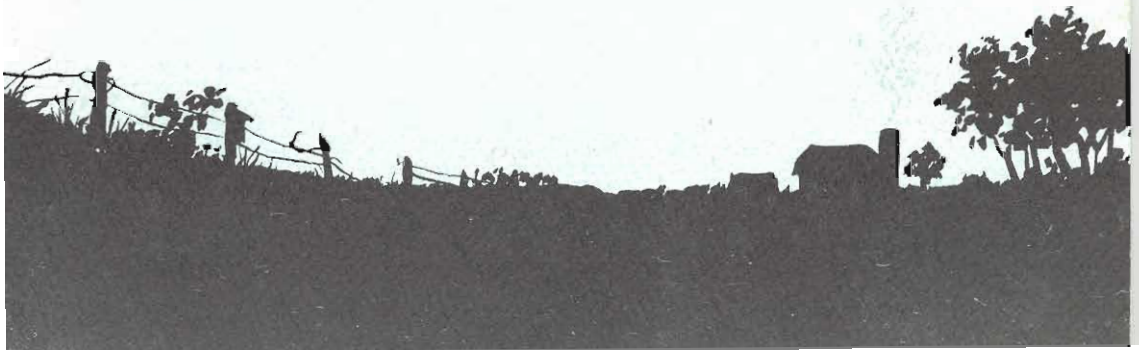

Sialia means bluebirds. Hence the title of this journal. Technically, *sialia* is the Latinized, neuter plural version of the Greek word *sialis*, a noun meaning a "kind of bird." Since the Eastern Bluebird was the first bluebird classified by Carolus Linnaeus (1707-1778), he gave it the species name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

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

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Sialia

The Quarterly Journal About Bluebirds

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EDITOR
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CONTRIBUTING EDITOR
Lawrence Zeleny
ART EDITOR
Richard L. Woodward

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COVER

Art Editor Richard L. Woodward's cover depicts Tree Swallows, one of which carries a feather. Feathers line the nest cup. Results of a study involving this species begin on page 3.

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 20707.

Presidential Points

Sadie Dorber

The fog and heavy rain didn't discourage over 200 enthusiastic bluebirders, as they met in West Winfield, New York. The occasion was the Fourth Annual Fall Meeting of the Upstate New York Bluebird Society.

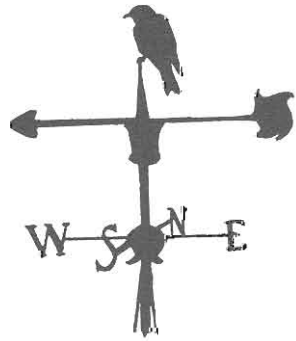
The Upstate Society, which was formed in 1982, meets twice a year in a centrally located area. It's a time to compare accomplishments or failures, work out problems, and spend a pleasant day with a group that shares the same interest.

I can remember vividly the first meeting attended by Ray Briggs of Cobleskill in Schoharie County. Ray was just beginning to become serious about bluebirds so he had a long list of questions and problems. Soon Joe Brown teamed up with Ray and Schoharie County hasn't been the same since.

The Upstate Society President Fran Hanes had polled the membership during 1985 to find out exactly what they would like presented at meetings. The overwhelming response was "Founder Larry Zeleny." So Larry was the featured speaker at this meeting. Accompanying Larry to West Winfield were Executive Director Mary Janetatos and Treasurer Chuck Dupree.

Dr. Zeleny chose to discuss orphaned bluebirds, since the crowd consisted basically of experienced bluebirders who were already knowledgeable about starting trails and monitoring boxes.

People sometimes tell us they think something has happened to the parent bluebirds, but they aren't 100% sure. Larry had an easy solution to this dilemma; he suggested placing a spider web or fine thread across the entrance hole. After waiting two hours if the thread or spider web is still across the entrance, you probably have orphans. The nestlings may be cold and by this time quite hungry. Without help they will die within 24 hours.



To warm the bluebirds, Larry suggests cupping them in your hands or placing them inside your shirt. I can well attest that the latter suggestion works very well. A neighbor called this summer saying that the young had fledged from the box in the lawn that day and she'd just found one fledgling on the ground very cold and drenched from an afternoon storm. I instructed her to bring the bluebird right over and promptly placed the near lifeless bird inside my shirt. It took nearly an hour in that position for the bird to get warm, dry and start cheeping.

Food, of course, is the next essential task facing you. Dog or cat food is an excellent emergency food and is easily obtained, if not on hand. If necessary, use force feeding.

Mary Janetatos discussed community involvement and suggested including organizations such as Garden Clubs, Scouts and Camp Fire Girls.

Chuck Dupree narrated an informative slide show on cavity nesters and reminded the audience that along with helping the bluebird we must remember that the other cavity nesters also need help.

Reporter Tim Blydenburgh chose to use the wording "the bluebird appears to be winning its public relations battle" on the front page of the *Utica Observer Dispatch* Sunday Edition the morning following the meeting.

It will be a great day for all of us in New York when the bluebird is removed from the Department of Environmental Conservation's list as a species of special concern—a goal many of us are trying to accomplish. ■

A SIX YEAR STUDY OF NESTING TREE SWALLOWS IN DELAWARE STATE PARK, DELAWARE, OHIO 1979-1984

Richard M. Tuttle

This paper was presented at the Eighth Annual Conference of the North American Bluebird Society, July 12-13, 1985, at Red Deer, Alberta.

INTRODUCTION

In 1979, seven pairs of Tree Swallows (*Tachycineta bicolor)* nested in Delaware State Park (DSP), Delaware, Ohio. By the end of the 1984 breeding season, the colony numbered 71 pairs. Growth of this colony is the subject of this study which focuses on two goals. First, because central Ohio is near the southern edge of the Tree Swallow's breeding range, data from this region provide an important comparison with more northern breeding populations. Second, the Tree Swallows of DSP breed exclusively in bluebird nesting boxes and share the park with a healthy population of Eastern Bluebirds (*Sialia sialis*). Thus, a description of their competition for nesting boxes and available habitat is especially interesting to the increasing number of bluebird conservationists. This study will keep both of these goals in mind as the breeding history of the DSP Tree Swallow colony is described.

THE STUDY AREA

Delaware State Park is located four miles north of Delaware, Ohio, on the western shore of Delaware Lake, a flood control reservoir constructed by the U.S. Army Corps of Engineers in 1951. The dam is located at 40°23' N. latitude, 83°04' W. longitude. The summer pool elevation is 915 feet above sea level with the top of the dam 957 feet above sea level.

The park is leased from the Corps and administered by the Ohio Department of Natural Resources, Division of Parks and Recreation. DSP is composed of 1815 acres [734.5 hectares] of former farmland that adjoins the 1330 acre [538.3 ha] lake. The park serves the public with 9.9 miles [16 km] of paved roads and 11.7 mi. [18.8 km] of mowed trails linking four camping areas with 214 camping sites, a sod airstrip, six picnic areas, one swimming beach, two boat launch areas, one marina, a large maintenance area with a 1.2 acre [.5 ha] pond, a 0.7 acre [.3 ha] ice skating pond, and numerous parking lots.

The Delaware Wildlife Area, a 6072 acre [2457 ha] public hunting reserve administered by the Ohio Division of Wildlife, borders the eastern shore of Delaware Lake. Ninety percent of the wildlife area's land is in meadow and grain crops intermixed with brushy fencerows and extensive brushy coverts. Approximately ten percent of the area is wooded. Fifty-four public fishing ponds dot the wildlife area and small numbers of Tree Swallows have nested in the Wood Duck (*Aix sponsa*) nesting boxes since 1968 when they were first reported by wildlife workers.

Succession has reforested some of the park since its establishment in 1951, but many of the farm fields remain fields, dotted with hawthorn, cottonwood, Silver Maple, and American Elm trees and are ablaze with New England Aster, wild sunflower, and goldenrod in the fall. Only twenty percent of the park is wooded. Old fields and pastures are lined with straight rows of Osage Orange trees which clearly define the fencelines of yesteryear. The Soil Conservation Service

(1969) reports that the soil has "slow permeability and a clay subsoil that restricts the movement of water and the penetration of roots." Both traits slow the formation of a temperate deciduous forest.

Many of the fallow fields had been freshly plowed before the public acquired the land in 1951; now the old plow furrows collect and hold water after winter thaws, spring rains, and summer downpours to provide excellent breeding habitat for flying insects. In 1977, DSP had all of the ingredients for a breeding population of Tree Swallows: open wet fields, a large body of water nearby, and a small population of swallows on the other side of the lake. Only the absence of nesting sites prevented a population explosion. No naturally nesting Tree Swallows were known in DSP in 1977.

TRAIL HISTORY

The first bluebird nesting box was mounted in DSP on 7 July 1977, one of 16 donated to the park by a troop of "Blue Birds" representing Camp Fire, Inc. Only one pair of House Wrens (*Troglodytes aedon*) nested in the boxes, and their eggs and young were used during nature programs presented by the park naturalist.

Twenty-six nesting boxes were ready for the 1978 season, but swallows did not appear in the park to nest. All of the boxes were within walking distance of the nature center. Sixteen of the 26 boxes were placed along Briar Patch Trail, the park's only trail used by the summer naturalist for nature programs. The trail lived up to its name and 104 wrens were raised in the brushy habitat. The wrens provided props of eggs and young for many nature programs throughout the summer. The first pair of Eastern Bluebirds nested in an open field where they fledged eight young during two nestings.

These bluebirds inspired me to install more nesting boxes so 66 boxes greeted the 1979 nesting season. Boxes were placed throughout the park and the wrens produced 219 young. Ten successful nesting attempts by bluebirds produced 44 young, and swallows nested for the first time raising 29 young in six successful attempts.

By the 1980 breeding season, I had 27 more boxes throughout the park to accommodate an expected increase in bluebirds and swallows. Wrens and swallows both increased to raise 278 and 89 young respectively. Bluebird production held steady at 45, only one more than the 1979 level.

The number of nesting boxes was not increased for the 1981 season, but a rearrangement was in order. Nesting boxes along Briar Patch Trail were no longer needed by the naturalist to inspire campers with visits to wren eggs and young; the park now had ample populations of Eastern Bluebirds and Tree Swallows. Thirteen boxes were removed from Briar Patch Trail and placed in open unmowed fields to attract Tree Swallows. House Wren production dropped to 84. Bluebird production remained steady at 49, but swallows increased significantly to produce 158 young.

In 1982, 16 more boxes were added to the DSP trail, nine of which were attached to traffic signs. The wren production dropped to 44, bluebirds increased 48% to 65 and swallow production jumped 68% to 266.

In 1983, nine additional nesting boxes increased the trail total to 117 boxes. The Tree Swallows had 61 successful nestings to raise 261 young. The bluebird production increased 140% over the 1982 total of 65 to 156 young fledged. One possible explanation for the increase in bluebirds is that 3.5 mi. [5.6 km] of old roadways were reopened and mowed to created additional nature trails throughout the park. These new grasslands added bluebird hunting habitat, especially for siblings from first broods. Also, wintering bluebirds were observed along the new trails throughout the winter months. The impact of the new nature trails on the bluebird population remained speculative.

The 1984 nesting season confirmed that the carrying capacity of

DSP's bluebird trail is more than 150 bluebirds and more than 260 swallows. One hundred fifty-five bluebirds and 292 Tree Swallows were raised in 1984. House Wrens raised 125 and 105 young in 1983 and 1984 respectively.

The general history of DSP's bluebird trail is a good example of two extirpated species returning because of the installation of artificial nesting sites. A detailed look at the Tree Swallow breeding population will be the subject of the remainder of this study.

METHODS

Except for the nine nest boxes mounted on signs, all boxes are mounted on steel pipes with the entrance holes 1.8 yards [1.65 meters] above the ground. All pipes are greased and predation from climbing animals such as raccoons is nonexistent. Eight boxes have bottoms 4 inches [10.2 cm] square, the sign-mounted boxes measure 4.5 in. [11.4 cm square], and 98 or more boxes measure 5 in. [12.7 cm] square. All boxes are side-opening or front-opening.

All boxes are checked every five to seven days during the nesting season. Starting with the first Tree Swallow brood in 1979, Dr. Edward H. Burtt, Jr., of the Zoology Department, Ohio Wesleyan University in Delaware, Ohio, and Richard M. Tuttle have banded all of the DSP swallow nestlings. Since 1981, all female Tree Swallows have been identified; most have been lifted from their nests at night (see Burtt and Tuttle, 1983). Only females incubate and brood and they are quite easy to capture. Burtt and Tuttle (1983) suggest that Tree Swallows be banded after the start of incubation or later, when the probability of desertion is low, and at night when capture is most efficient for the bander. Tree Swallows banded before or during laying abandon their clutches more often than females banded during incubation. Numerous times, since the 1981 study, females have been found on the nest while moitoring was in prograss. If the females had not been on the eggs for at least five days, they were not disturbed. They were identified at a later date to avoid desertion.

Breeding female Tree Swallows can be aged. First year breeding females (SY—Second Year Birds) appear "brown" or "green" when viewed on the nest. Older females (ASY—After Second Year Birds) appear much bluer. By 1982, field observations were extremely accurate and the age of the breeding female swallows was recorded with confidence. Hussell (1983) has described the best procedures to age breeding female Tree Swallows.

RESULTS

During the six year study of Tree Swallows in DSP, a total of 1761 eggs were laid, an average of 73.8% hatched and 62.2% of the eggs fledged.

In order to provide an accurate report on clutch sizes, all incomplete clutches were removed from the data. Banding practices during 1981 had adversely affected the reproductive success of the Tree Swallows in DSP (Burtt and Tuttle, 1983).

The average clutch size for 1979, 1980, and 1982-84 was 5.32. The average number of eggs hatched was 4.26 (80.1%) and the average number fledged from each clutch was 3.53 (66.4%); 82.9% of all hatchlings fledged. The numbers coincide with what is commonly seen in the field, one egg falls to hatch and one nestling falls to fledge.

Clutch size, based on 309 completed clutches, was as follows: 136 clutches of 6 eggs (44.0%) which was the most common clutch size, 100 clutches of 5 eggs (32.4%), 31 clutches of 7 eggs (10.0%), 28 clutches of 4 eggs (9.1%), 9 clutches of 3 eggs (2.9%), 2 clutches of 2 and 8 (0.6% each), and one clutch of 9 eggs (0.3%). Over 86% of the clutches were 5, 6, or 7 eggs.

Brood size at fledging was based on 306 completed clutches distributed as follows: 80 clutches fledged 5 birds (26.1%), 60 clutches were failures as no birds fledged (19.6%), two groupings of 54 clutches each fledged 4 and 6 (17.6% each), 25 clutches fledged 3 (8.2%), 13 clutches fledged 2 (4.2%), 11 clutches fledged only 1 (3.6%), and 1 clutch fledged 8 (0.03%). Nearly 20% experienced total nest failure after their clutches were completed. Nearly 70% of the families fledged 3, 4, 5, or 6 birds.

Of 71 Tree Swallow females nesting in DSP in 1984, 34 (47.9%) nested in DSP in 1983 or earlier; of these, 20 (58.8%) had hatched in the park. Fifteen (21.1%) of the females were "brown" (SY) and new to the park, 14 (19.7%) were "purple" (ASY) and new to the park, and 8 (11.3%) were "brown" (SY) females raised in DSP in 1983.

The determination of the ages of the 71 females reveals that one-third (32.3%) of the birds were one year old. Over one-half (53.5%) were definitely one or two years old. Fourteen birds, purple (ASY) females new to the park in 1984, could be two years old or older; one bird could be older than five years. Unfortunately, in 1980 and 1981, records were not kept identifying banded females as "brown" or "purple," so their known ages cannot be accurately narrowed. Two birds had been banded as nestlings in 1979 making them five years old.

Maps were used to measure the distances between 1984 nesting sites and 1983 nesting sites of 32 Tree Swallow females that nested both years. In 1984, 10 (31.3%) returning females nested in the same box as in 1983. Sixteen (50%) nested within 100yds. [91 m] of their 1983 nesting sites, and 29 (90.6%) nested within 65.6 yds. [600 m] of their 1983 nesting sites.

Four of the eight 1983 fledglings returning to nest in 1984 nested between 2734 and 2953 yds. [2500 and 2700 m] from their fledging site, farther from their 1983 site than all of the 1983 veteran breeders. Only two of the eight nested within 328 yds. [300 m] of their 1983 fledging site. The distance between the most northern and the most southern nesting boxes was 4921 yds. [4500 m].

Since 1977, swallows have established breeding populations on six bluebird trails in Delaware County totaling over 325 nesting boxes. Thirteen Tree Swallow females raised in DSP dispersed to nests on other trails between 1980 and 1984. Twelve of the dispersals have been reported within Delaware County, 11 dispersed distances of 8.7 to 12.9 mi. [14 km to 20.8 km] to trails near Alum Creek Lake, another flood control reservoir southeast of DSP. One DSP fledgling dispersed to the Olentangy Environmental Control Center, a sewage treatment plant 15.4 mi. [24.8 km] south of DSP. The longest known dispersal from DSP was a bird raised in 1981 which nested directly north of the park near Tiffin, Ohio, a distance of 43.8 mi [70.4 km].

Six Tree Swallows dispersing into DSP were raised and banded on other trails in Delaware County. Five were raised near Alum Creek Lake and dispersed distances from 8.5 to 10.9 mi [13.6 to 17.6 km]. One bird was banded as a nestling in Blendon Woods Metro Park east of Columbus, Ohio, a dispersal of 22.9 mi. [36.8 km] to nest in DSP.

The yearly nesting seasons for Tree Swallows, Eastern Bluebirds, and House Wrens were used to compile a composite nesting season graph for DSP. The Tree Swallow nesting season from the first egg to the last fledgling is May 3 to August 1 or 91 days. The season for Eastern Bluebirds is from April 5 to September 8 or 157 days. House Wrens have a 111 day season from May 10 to August 29. Tree Swallows usually raise one brood. Swallows renesting after initial nest failures and

later nesters, usually first year birds, use the boxes in July. Most bluebirds nest twice although some females raise a third brood. The female whose fledgling emerged on 8 September 1982, had the only clutch of two eggs in the history of DSP and only 1 egg hatched to fledge. House Wrens nest twice. Nest building begins for some swallows in mid-April, some bluebirds start in mid-March, but many more start nest building the last week in March. Most wrens begin to build nests the first week in May, but some begin in mid-April.

Established nesting seasons help to clarify the causes for nesting failures of Tree Swallows and Eastern Bluebirds. House Wrens were responsible for 35 (10.5%) failures in 333 nesting attempts by Tree Swallows and 14 (8.1%) failures in 173 nesting attempts by bluebirds. When failures alone are examined, wrens caused 38.5% of the total failures of Tree Swallow nests and 41.2% of the total bluebird nest failures. Simply stated, wrens caused the failure of one out of 10 Tree Swallow nests, or four of ten nest failures of swallows and bluebirds were caused by wrens. In all but one case eggs were punctured or thrown out. Only once were newly hatched Tree Swallow young dropped out of the nesting box by wrens.

All Tree Swallow nests that were destroyed by wrens were destroyed between 8 May and 28 June. This represents the first nesting of House Wrens and Tree Swallow eggs are found in the boxes. Most swallows have fledged by the end of June and few swallow eggs are in the boxes in July.

Bluebirds destroyed swallow eggs and built nests in the usurped boxes eight times between 24 May and 15 June. In Ohio, this is the beginning of the second nesting of the bluebirds. Of eight usurpations by bluebirds, six (75%) had bluebirds nesting in the box for the first time that year. The two exceptions involved the same box; swallows had built a nest after a bluebird family fledged. Bluebirds evicted them, built their nest, and laid eggs. The swallows promptly threw the bluebird eggs out, built a nest and laid eggs. The bluebirds dispatched the swallow eggs for the second time and were successful in retaining the nest site and fledging young. The above-mentioned case of a swallow throwing out bluebird eggs is the only recorded case from 1979-1984.

Bluebirds are usually feeding young by the time the bulk of the Tree Swallow colony is competing for boxes. By the second bluebird nesting, Tree Swallows have young. This may be one reason for the apparent relative harmony between the two species in DSP. This researcher wonders if, at more northern latitudes or higher altitudes, the nesting seasons may be truncated and swallows and bluebirds may be competing for nesting sites during a time when their nesting cycle stages are closer thus causing more conflict.

Since 1979, House Sparrows *(Passer domesticus)* have killed four adult swallows, one adult bluebird, and one adult wren. All were killed before any eggs were laid. Sparrows also killed two swallow broods of four and five young and usurped four swallow nests containing eggs.

I destroy all sparrow nests in DSP, but not before I have captured and destroyed the adults. Sparrows are captured by hand at night or during the day using the Joe Huber sparrow trap (1982). Competing sparrows are usually eradicated by late April. In 1984, eight sparrows were removed from five nesting boxes.

Park sparrow populations are minimal because the park does not have a winter bird feeding program, nor does it adjoin farms with active feed lots or residential areas—all famous for sustaining sparrow populations. Also, maintenance workers have plugged most of the possible sparrow roosts within the park.

SUMMARY

Delaware State Park is the summer home of over 70 breeding pairs of Tree Swallows and 20-25 pairs of East-

(Continued on page 34)

QUESTION CORNER

Lawrence Zeleny

My son Andrew and I have a trail of 100 boxes east of Didsbury about 50 miles north of Calgary. On parts of the trail there is competition between Mountain Bluebirds and Tree Swallows. Last year we had one nest which had five Tree Swallow eggs and three bluebird eggs. Tree Swallow adults raised all eight young. A duplicate situation occurred on our trail in 1979. Again, five Tree Swallows and three bluebirds were raised by swallows. Would you expect bluebirds raised by Tree Swallows to be self-supporting adults, able to migrate and return again to reproduce?

A second incident occurred on 1 July 1986 when my wife and I came across a nest of bluebirds that had been abandoned. There were six young: one was already dead and the remainder were becoming cold although most were still plaintively squawking. On that date there was only one other brood of bluebirds on the trails we were monitoring and that brood was newly hatched. We elected to drive the dying young from the West Dewinton Trail 15 miles to the Millersville Trail where we knew there was a Tree Swallow nest with only one young about three days old. Unfortunately, our efforts didn't work as we found all young (including the swallow) dead when we checked two days later. Was there any possibility that the Tree Swallows would raise the bluebird young in a situation like that?

Donald Stiles
Calgary, Alberta

In your letter [here abbreviated] you raised some interesting questions concerning experiences on your bluebird trails this past summer. First, you asked whether or not bluebirds that are hatched and raised by Tree Swallows would become self-supporting adults able to migrate and return again to reproduce. My *guess* is that since the life style and feeding habits of the two species are so different, the young bluebirds would probably join a flock of their own kind late in the summer and continue their lives as normal bluebirds. This, of course, is only a guess, but it is the pattern that cowbirds follow regularly under similar circumstances.

If the life styles of the two species were quite similar, the outcome might be different. Late one summer in northern Wisconsin, I observed a huge flock of Tree Swallows evidently assembling for their fall migration. This flock contained *one* immature Purple Martin which remained with the flock during the entire week that I was in the area. Here I surmised that earlier in the season a martin had laid an egg in a Tree Swallow's nest, and that, since the two species were both swallows with similar habits, the resulting young martin "thought" he was a Tree Swallow and probably remained with the clan until the next mating season.

You also asked whether Tree Swallows would adopt and raise orphaned nestlings placed in a nest with their own nestlings. I believe that they would, assuming that the bluebird orphans are about the same age as the swallow nestlings and that they are still strong enough to beg for food vigorously. If not, the orphans would probably die quite quickly since birds will rarely, if ever, pamper weaklings in their broods. This is nature's way of providing for the survival of the fittest. ■

MOUNTAIN X WESTERN BLUEBIRD HYBRIDS

Art Aylesworth

Hybridization in the wild between congeneric species is rare, but has been documented on numerous occasions. Examples include a variety of hybridizations among waterfowl species. Similarly, mule deer and whitetail deer hybridizations have been recorded at least once from every state and province where both species occur.

Hybridization between Western *(Sialia mexicana)* and Mountain Bluebirds *(S. currucoides)* has not been previously documented, but, though unlikely, such an event is entirely possible within the range where both species occur. This paper presents evidence of the first known such hybridization in western Montana.

On 20 July 1985, Mr. Raymond Swanger, who monitors about 15 boxes in the St. Regis, Montana area, noted a Western Bluebird male and a Mountain Bluebird female perched together on a fence wire close to a bluebird box. Careful observation revealed that both birds had insects in their bills; however, they did not enter the box, probably because of the closeness of Mr. Swanger and his pickup truck. He concluded that they likely belonged to other boxes in the area approximately one-half mile by one-half mile on separate roads. He notified me, however, and on 27 June at 7:00 a.m. I made my first observation with him. The adults were very definitely feeding young birds in the box. I opened the nesting box and counted six nestlings.

On 27 June at about 8:00 p.m., I visited this box again, this time with Don Durland. We observed what appeared to be the same two birds going in and out of the box feeding young. Mr. Durland and I drove slowly around the area where we located five additional boxes within approximately one-quarter mile of the hybrid box. Two boxes had adult Mountain Bluebirds caring for young and two boxes had Western Bluebirds caring for young. One box was examined and found to be empty.

On 4 July, Deni Hershberger and I again observed the suspected hybrids. We observed both the male and the female feeding the young for half an hour. We opened the box and it still contained six young birds; I banded each on the left leg. I did not band any other birds within a ten mile radius of this area. I made arrangements with Mr. Ray Miller to photograph the young and their parents. This was done on 10 July. Mr. Miller took pictures of both the male Western and the female Mountain with insects in their bills as they entered the nesting box to feed the young. Because it was an overcast evening, Mr. Miller decided to return on 13 July to take additional slides, but he then found the box empty. Apparently, all the young had fledged. I went with Mr. Miller to the area two additional times, but we could not locate the young birds.

On 18 August, I observed two young banded bluebirds with very spotted breasts feeding in the vicinity of the box. They appeared to have a tint of orange on their breast and a steel blue to their backs. However, when I observed the banded birds with other young birds that were not banded, I could not detect any apparent differences in any of the young birds. At times, there were as many as 50 young bluebirds feeding in a 40 acre area with adult Mountain and adult Western Bluebirds. At this stage of growth, I was unable to detect any differences in any of the juvenile birds. Juveniles of both species appeared the same. The last observation of any of these banded birds was on 14 September, when I observed one banded young bird with five unbanded birds. Also, in the immediate area were three Mountain Bluebird males and two Westerns, one male and

(Continued on page 21)

Bluebird T-Shirt Design Wins Blue Ribbon at 1986 Philadelphia Flower Show

Photograph by Tanya Wood, York Sunday News staff photographer

Yvonne Snyder of Dover, Pennsylvania, won a blue ribbon at the 1986 Philadelphia Flower Show for her poster of a T-shirt entitled "Help Save the Bluebird" which was executed with dried plant materials.

The design shows items essential to a bluebird's habitat: nesting box, low growing plants, and a tree toward which newly fledged birds can fly. Among the plant materials used were white birch bark for the box and tree trunk; garden thyme for the branches and tree leaves; wild yarrow, clover, melilot, grass and a few blue forget-me-nots for foreground plants; and rabbit's-foot clover for the "bunny." The bluebirds were made of individually pressed delphinium petals. ■

IS THERE A NEED TO FEED BLUEBIRDS?

Jack R. Finch

This paper was presented at the Eighth Annual Conference of the North American Bluebird Society, July 12-13, 1985, at Red Deer, Alberta.

Most bluebird enthusiasts would probably admit that the main reason they feed bluebirds is for the sheer enjoyment of watching them. However, with natural woodland habitats decreasing, these beautiful, shy little birds need more than just our casual interest to ensure their survival. They need our help.

REASONS FOR FEEDING

In the southern states, bluebirds often fail to find sufficient food during late winter and early spring when the wild and ornamental berries are gone and there is a scarcity of insects. The critical period for birds is from February into April, although earlier snows or sleet can also be devastating. At that time of year, there may be sufficient food, but when covered with snow or ice, the birds simply cannot get to it.

The last bird disaster occurred 2-3 March 1980, when a severe storm, extending from New Jersey to northern Florida, blanketed heavy snow along the east coast. With the possible exception of some sumac, all the berries were gone by the time the storm hit and thousands of birds of different species perished. At times like this, bluebird feeding becomes more than just an enjoyable pastime. It is a necessity.

Bluebirds that winter in the northern winter range have greater need and would visit feeders more often. In the northern states and southern Canada, however, no feeding should be done in the early winter because it might delay some birds that ordinarily migrate south. When the migrating birds return in the spring, late snows can cause heavy losses, so supplemental food at these times will help them survive.

Most of us know that bluebirds are not regular feeding station customers. Firms that promote feeders and the sale of bird seed make no mention of bluebirds and, in fact, few commercial bird feed mixes contain anything that bluebirds will take. It is obvious that we must use a food that bluebirds not only prefer, but will come back to repeatedly.

DOGWOOD IS FIRST CHOICE

The choice or favorite berry of the bluebird is that of the Flowering Dogwood (*Cornus florida*). The fruit of the dogwood is higher in lipid or fat content than other berries. (This subject is explored in the August, 1984 issue of *Natural History.)* Actually, if you mix other berries with the dogwood in the top feeding tray, the birds will always take the dogwood first.

Dogwood berries are not always available, so they can be mixed with raisins and currants. Currants are small raisins dried from the Black Corinth grape. Although people cut the raisin in half, bluebirds will swallow these and the dogwood berries whole. Many smaller birds and the cardinal remove the flesh from the dogwood seed.

Where and how do you obtain dogwood berries? The best berries can be

found on yard trees. Start cruising the residential streets in early to mid-October to locate well-fruited trees. Avoid new or very old residential areas. The best trees will be from 15 to 30 years old.

Don't become easily discouraged if they seem hard to find. Green berries among green leaves or red berries among red leaves can be difficult to see. However, waiting for most of the leaves to fall is a mistake because migrating birds may clean the trees first. A flock of starlings or robins can strip a large tree in a few minutes.

Obtain permission from the tree owner to pick the berries at a later date, explaining that removing them will not affect the next year's bloom or fruiting. Don't start picking until the berries are ripe, usually in mid-October or early November. If the flesh still clings tight to the seed, they are not ripe.

Because the dogwood berry is a fruit, they can be infested with a specific dogwood fruit fly worm. If there are several dark berries on a tree, it may be best to avoid it. Extended warm weather in the fall causes worms to be worse while later maturing berries seem to have fewer worms.

Dogwood berries have to be picked, not shaken, from the limbs. Spread a sheet of ground cover material, tough enough to support ladders, under the tree. Pick the berries, allowing them to fall on the ground cover. Next, remove leaves and large twigs, although some trash material will help to prevent bulk berries from going into a heat, prior to final cleaning and refrigeration. Lesser amounts can be picked by hand using a small pail or container hung about the neck. If there is not too much spoilage, five gallons is a suggested amount to pick for one feeder to feed bluebirds only. Yields of berries per tree can vary from five to twenty-five pounds in a good year. The 1985 crop of dogwood berries is very light. Berries can be cleaned with a large fan. Remove all damaged, dark or wormy berries by hand.

Store in ventilated, UNSEALED containers at 29-32 F. A small container of water one inch deep that alternates from freezing to thawing makes a good temperature gauge.

Grade through ALL the berries once every 10 to 12 days. Place bad, dark or moldy betties on the top feed tray or scatter on the ground under the feeder. The damaged berries can also be placed under low bushes for many of the birds that prefer protection while feeding. Another use for damaged berries is to plant them immediately in WELL-DRAINED soil, about 1/2 inch deep. Some seed will germinate the first spring and the others the following year.

I have kept a few berries over seven months using no treatment. The few treatments I have tried did not prolong the quality of the berry. As you can see, this is an area where much research needs to be done.

TRAINING PROGRAM

There is a three-step training program to help the bluebirds become accustomed to this feeding process. The first step is to help them find the feeder, the second is to get them to go inside to feed, and the third is to encourage them to eat raisins and currants when all the berries are gone.

Training must be done early BEFORE the severe weather begins. It may take as little as a day or as long as a month for them to find the feeder, though most find it in less than a week. This knowledge is important for it stands to reason that if the bluebirds know where the McDonald's fast food restaurants are, they can visit them with no delay and will be able to roost during a cold storm with a full crop.

You will want to place the feeder in the best location to observe it. This, however, may not be the ideal spot for the bluebirds to find. To encourage them to start taking food, it is helpful to place two, three or more temporary flat, open trays on support posts near their regular hunt perch sites. Food on these trays will be visible to birds perched above.

It sometimes helps to place a few berries around the bird bath or on the ground below the feeder. Bluebirds have been taking dogwood berries from the tree for thousands of years, but never before from a platter and out of season. This may be the reason they are a little cautious at first.

FEEDING BLUEBIRDS

What is a bluebird feeder? The best feeder is a flat top nesting box that has had very little modification. The slanting roof can be used if proper supports are made to level the top food tray. The three food trays on and in the nest box are made of 6 X 6 inch or 8 X 8 inch wire mesh. The food tray to be placed on the top of the nest box is about 6 inches square and 3/4 inch deep. This tray rests on two wires or 1/4 inch cleats on top of the roof. The drainage under this tray is very necessary.

Two small 18 gauge copper wires across the tray and wrapped around two nails on each side of the roof will hold it firmly in place. A small trough-shaped tray, about 5 inches long and ¾ inch to 1 inch wide and closed at the ends, should be placed in front of the box about 2 inches below the entrance hole. This tray is supported by two small nails with the points barely started into the front and the body of the nail extending out about 1-¼ inches.

The most important of the three food trays is the one on the inside. The dimension of this tray is 1/8-1/4 inch less than the inside dimension of the box to allow easy removal and should be supported with a pint berry cup or other similar support. The inside tray should be approximately three inches below the entrance hole, low enough to force the bluebirds to go inside to reach the food.

There will be a pecking order at the feeder. It is helpful to control this by placing two or three stakes of equal height three or four feet from the feeder. If the feeder is in mockingbird territory, the mockingbird will not allow other birds to take food and must be forced to go elsewhere. Other feeding stations can be placed outside his territory. If the distance between each feeder is about 250-300 feet, he cannot guard them all.

Most cooperators using the feeder have observed anywhere from two to ten bluebirds in an area but not on the feeder at the same time. We would be interested in hearing reports of more.

It may be appropriate to give some form of call when you place food in the feeder. In time, the bluebirds may associate the call with the feeding. Also, always remove old food from the inside tray and place it on the top tray. Fresh food should be placed inside.

How long should feeding continue? Several participants in North Carolina have continued to feed through the first brood. The adult birds carried food to the nest during the last days before fledging. After the young fledged, they were brought to the area near the feeder to be fed. Occasionally, the young perched on the feeder to be fed. It is hoped that in this way the young will learn about the feeder.

Is there danger of making freeloaders of the bluebirds? This is doubtful. Insects will always be the preferred food. Bluebirds have been observed taking several insects before returning to the feeder for a raisin or currant. Bluebirds usually visit the feeder on a regular basis early in the morning and late in the evening. If, however, it is cold, windy or snowy, they might be near the feeder most of the day.

To determine what the bluebirds are taking from the food trays and from which ones, you can start the first feeding by counting each variety of berry you put on each tray.

You may wish to sort through the berries, removing the larger ones. Bluebirds can swallow all berries that will pass through a 3/8 inch hole and a few 7/16 inch, but none as large as ½ inch. If these larger berries are allowed to dry and shrivel to a smaller size, the birds will readily take them if they have not turned dark.

Dogwood trees are selected and grown by commercial nurseries for

their bloom, not for the fruit. Three of the better-known white dogwoods that consistently produce heavy crops of berries are Cloud Nine, Barton White and Cherokee Princess.

After much searching, I have located several selections of trees with late maturing berries that also appear to have few worms and remain on the trees longer or until the birds take them. I am now in the process of growing seedlings to which I plan to bud and graft these more desirable berried trees. The dogwood berry seems to be able to take temperatures of 8 to 15F on the trees and still remain red and edible to the birds. Temperatures much lower than 15F turn the berries dark.

Bluebirds eat and run. Their visits may be so quick that you can easily miss them. Most bluebirds swallow one or two berries and fly off with another, although occasionally they will take more. A flicker can take 13 berries at one feeding.

Feeding bluebirds may not be for everyone who feeds birds in the normal way. With the possible exception of the hummingbird feeder, however, the bluebird feeder is most rewarding to anyone sincerely involved in trying to feed them. If you do any serious feeding or observation, it is good to make accurate daily notes of all the activity at the feeder. Also be sure to note the prevailing weather conditions.

Sometimes overly determined bluebirds insist upon nesting in the inside feed tray. When this happens, the best thing to do is remove the support and lower the tray with the nest.

If you have good success or negative results with the storage of the berries, it is important to know how the berries were stored.

Share this information with us so that we can become more successful in helping bluebirds in the future. Drop a note detailing your progress and/or problems to Jack R. Finch, Rt. 1, Box 341, Bailey, North Carolina 27807.

A twenty minute film is now available for schools, programs and nature centers entitled "Bluebirds....Bring Them Back." Included in this film is a segment on a winter feeding program for bluebirds. It is a look at research in progress. For more information, contact Berlet Films, 1646 Kimmel Road, Jackson, Michigan 49201.

If you would like information on raisins and currants, write to California Raisin Advisory Board, PO Box 5335, Fresno, California 93755.

Acknowledgment

I would like to thank Judith Rogers for editing this material so that it could be shared. ■

Rt. 1, Box 341
Bailey, NC 27807

Third Annual Bluebird Festival and Wildlife Art Show, March 7-8, 1987, Jackson, Michigan

The Dahlem Environmental Education Center is sponsoring the Third Annual Bluebird Festival and Wildlife Art Show on March 7-8, 1987, in the fieldhouse and adjacent lecture halls on the campus of Jackson Community College in Jackson, Michigan. Admission fee.

The festival will be held from 10-6 Saturday and noon to 6 on Sunday. Qualified speakers will discuss the Sandhill Crane and Kirtland's Warbler as well as the moose and wolf. Two Berlet films will be shown and Richard Tuttle will present "Where Have All the Bluebirds Gone?" The Saturday evening banquet fundraiser to benefit the "Bring Back the Bluebirds" program will feature NABS President Sadie Dorber as keynote speaker.

Outstanding wildlife artists will be displaying and selling their work. This year the festival will host the Michigan Waterfowl and Trout Stamp art competition. The public may view the judging. Special bluebird-related activities are planned.

For a schedule of events or additional information, write to the Dahlem Center, 7117 S. Jackson Rd., Jackson, MI 49201 or call 1-517-787-0806, ext. 197.

WINTER BOX FOR BLUEBIRDS

Vi and John Halpin

Each spring we find bluebirds which have died in our nesting boxes during the winter. We feel that, at least in our part of the country, a standard nesting box can be a potential death trap for bluebirds if they use it as a winter roost.

A thesis by Ricky J. Sinnott, completed while he attended the University of Missouri, entitled "Ecology and Management of the Eastern Bluebird in Missouri" proved helpful in our search for means to aid wintering bluebirds. By studying his material, we were able to devise construction plans for a winter box (Figures 1 and 2). We were then able to convince the *Mexico Ledger,* the local newspaper, to write an article publicizing this box.

The winter box features airtight construction except for the entrance hole. It contains three-quarter inch styrofoam insulation on all sides and is painted black to absorb the maximum amount of heat on sunny days. In order to accommodate the interior insulation, the box is larger than the standard nesting box. These boxes should be mounted on metal or wooden posts facing whatever direction minimizes prevailing winter winds and maximizes heat gain from the sun. Try to shield the entrance from wind with vegetation or topographical features but without shading it. Place the box in the open to absorb sunlight. The 1½ inch entrance is identical to that of the nesting box; a raccoon guard should be placed over the hole. Boxes should, if at all possible, be sited in proximity to a supply of wild fruits and berries as well as water. Monitor every few weeks on a warm (or at least a sunny) day. Droppings will indicate whether the box has been used. We have found that bluebirds seem to prefer having an old used nest in the bottom of the winter box.

If you are placing winter boxes on your trail, either remove the nesting boxes or plug the entrances until late winter so that bluebirds cannot roost in them. In Missouri, nesting boxes should be taken down by early December or all ventilation holes plugged with weatherstripping. The regular wooden nesting box is not as warm as the insulated box, but when all drainage and ventilation holes are plugged, it is less dangerous for bluebirds to use. As an alternative to weatherproofing nesting boxes, styrofoam can be put around the exterior of the boxes.

By the following spring, winter boxes must be removed before the weather becomes so warm that the additional heat load and lack of ventilation may be dangerous. Timing of winter box removal varies depending on the severity of the spring weather, but these boxes may be helpful on occasional cold spring nights in many parts of the continent well after breeding has begun.

Placing winter boxes in an area is only one way a person can aid wintering bluebirds. Thawed water is essential. Supplementing the food supply can also be important. Where feasible, plant berry-bearing shrubs and trees that will attract and sustain the birds. A combination of yellow cornmeal mixed with grease and made into a patty is a cheap and attractive supplement. If you are willing to provide more sustenance, crushed nutmeats, raisins, currants and chopped suet can be offered.

Acknowledgment

We are indebted to Ricky J. Sinnott for his bluebird research in mid-Missouri and to the Missouri Department of Conservation for supplying us with pertinent portions of Mr. Sinnott's thesis. ■

1411 Hickory Hill
Mexico, MO 65265

Editor's Note: NABS is anxious to learn the success our members have had with boxes such as the one here described.

Figure 1. Winter Box for Bluebirds.

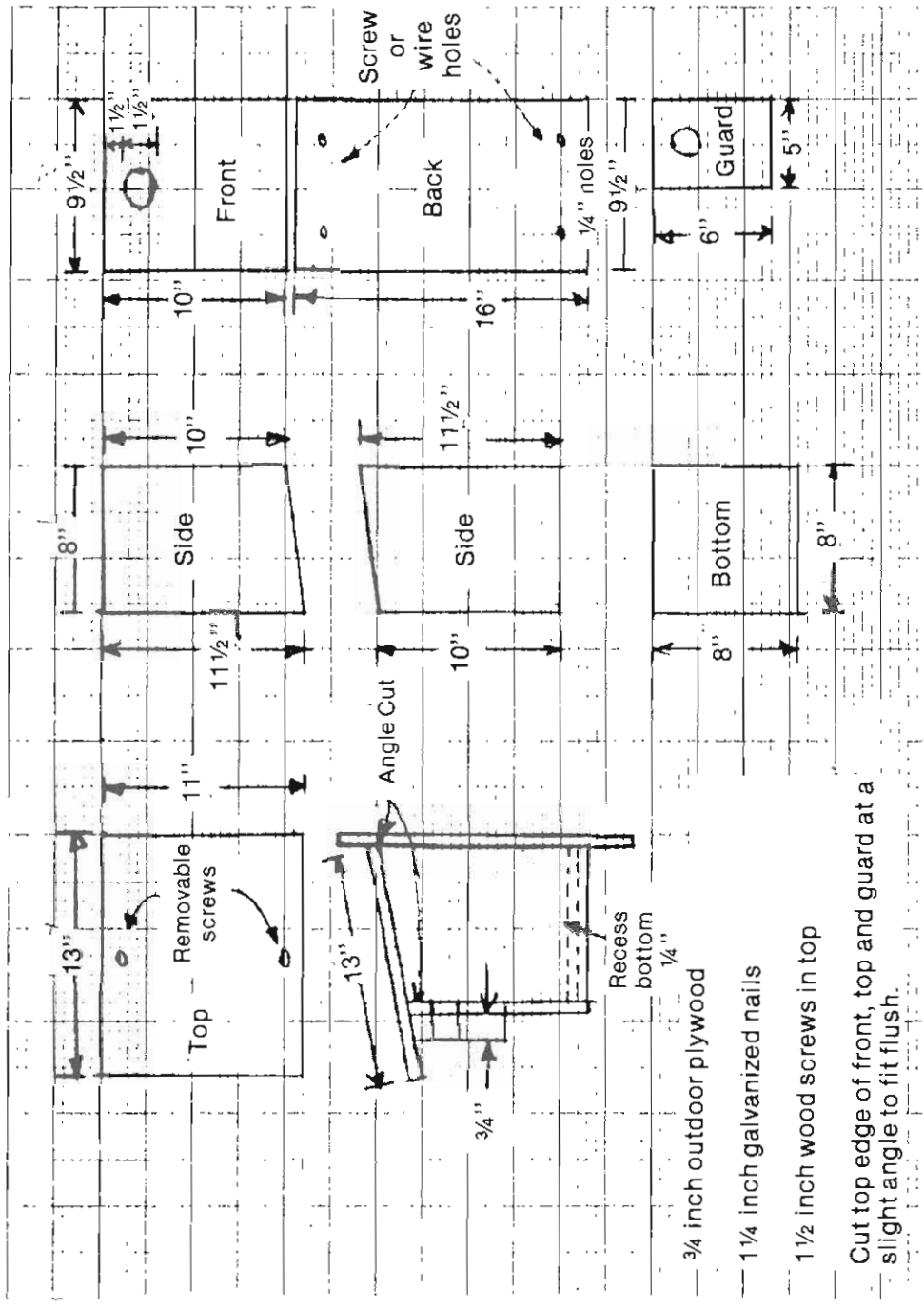
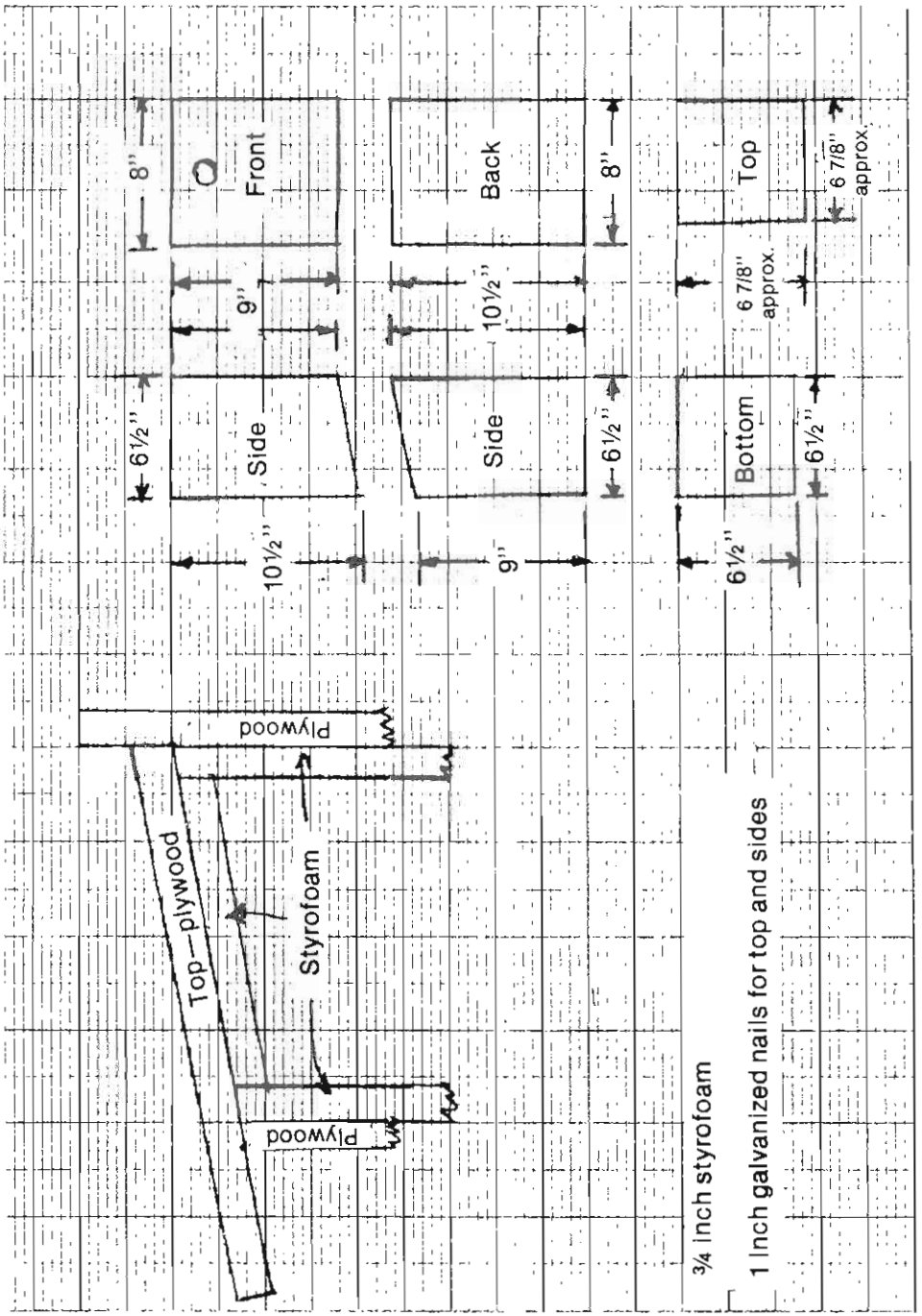


Figure 2. Insulation for Bluebird Winter Box.



Construction diagrams by John Halpin

Mexico Ledger photo by Dean Patrick.

Vi Halpin (right) holds a winter roosting box of the type she has installed on her bluebird trail near Mexico, MO. The boxes, designed to aid wintering bluebirds in severe weather, are foam insulated, painted black, and contain no drainage or ventilation openings other than the entrance. Mary Ann Williams (left) and Jennifer Simmons (center) hold a nesting box. Both boxes contain predator guards around the entrance holes.

Saran Wrap Saves Sialia

Adelaide Baden Barnard

Through Mark Raabe's inspiration, my husband made two bluebird houses, placed them on cedar poles on our two acres of land in March, and soon we had our first pair of resident bluebirds.

They arrived in late March making their presence known to us by pecking at the large thermopane picture window. At the time, I anthropomorphically decided that they had peered in and hovered at the window just to let us know they were here. After we saw them entering and inspecting the house, we jubilantly observed that housekeeping had begun.

Father bluebird, however, remembered the window. He returned repeatedly to fly against and peck his mirror image as he became obsessively determined to get rid of the bird that had invaded his territory. Soon he discovered another window bordering his territory, and began his seige against this new interloper. Now he had two battles raging.

Meanwhile on the homefront, Mother B. did all the work for now she had five nestlings.

Finally, we decided to tape the windows with Saran Wrap because we could not keep the blinds drawn perpetually. The moment we raised the blinds, Father would resume the attack.

At last came success. Father lost interest in his distorted image, Mother and babies reclaimed their helper, and the pacified father could focus on his family.

For readers who might like to try this method of protecting their windows, I will explain our method of application. We place the plastic wrap on the *outside* of the windows; otherwise the mirror-like effect would still exist. Applied on the exterior the crinkled wrap distorts the bluebird's image. The wrap is easily applied by leaving the roll in the box, fastening it by pressing an end of the wrap against the top of the window and working down vertically, smoothing as you go, finally, at the bottom tearing against the serrated edge of the box. At first I tried it horizontally, but got all messed up with tapings and patchings. Using it vertically from top to bottom and continuing with slight overlappings, it takes three vertical strips to cover my windows. It sticks without taping.

This wrapping technique should help not only bluebirds but other birds as well for it should keep a considerable number from flying into the glass and harming themselves. When we have had a bird hit a window, we pick it up and put it inside a paper sack, rolling it up and leaving the bird inside for 15 minutes or so. Perhaps the carbon dioxide helps them recover. My last paper bag bird was a hummingbird who was soon buzzing inside the bag so I could release him. ■

Box 740
Winfield, KS 67156

PLANTINGS FOR BLUEBIRDS AND OTHER WILDLIFE

American Mountain-Ash For a Fall Feeding Frenzy

Karen Blackburn

The American Mountain-Ash is an attractive tree which, because of its small size, will fit into nearly any landscape design. Although it is native to the northeastern states and Canada, it has not been as widely planted as its introduced relative, the European Mountain-Ash. As their names imply, mountain-ashes thrive in the cooler climate of the North; in the South they are generally restricted to higher elevations.

Both American and European Mountain-Ash produce colorful clusters of bright orange fruits which rarely go unnoticed by hungry birds. As soon as the fruits ripen in autumn, large flocks of Cedar Waxwings or American Robins may suddenly appear and descend upon the trees in what might aptly be described as a "feeding frenzy." At such times, mountain-ashes may be stripped clean of fruit, but if the fruits are not consumed soon after ripening, they will remain available to wildlife through much of the winter.

American Mountain-Ash
(Sorbus americana)

Native Range—Quebec south, following mountains, to Georgia and west to Manitoba and Illinois.

Hardiness—Zone 2

Habitat—Forest understory, woodland clearings or exposed sites, preferring moist, fertile soil. Also found on dry, rocky sites at higher elevations.

Habit—A small deciduous tree reaching a mature height of 30 feet. The compound leaves bear 13 to 17 toothed leaflets.

Fruit and Flowers—Flat-topped clusters of white flowers appear in early summer. Showy clusters of orange fruits ripen in autumn.

Landscape Value—Because of its size, American Mountain-Ash is a good choice for adding color and interest to small suburban yards.

Culture—Prepare site well prior to planting. Prefers rich, moist soil with pH ranging between 4.5 and 6.5. Best in full sun but will tolerate light shade.

Propagate by seed sown immediately after collection.

Undesirable Traits—Not recommended for extensive plantings due to susceptibility to stem borers, though affected plants frequently recover by sprouting.

Wildlife Value—Uneaten fruit will remain on the tree providing an emergency source of food throughout the winter months. The fruits of American Mountain-Ash are a preferred food for the Ruffed Grouse, Red-headed Woodpecker, Gray Catbird, Brown Thrasher, American Robin, Eastern Bluebird, Cedar Waxwing, Common Grackle, Northern Oriole, and Evening and Pine Grosbeaks. Deer and cottontail rabbits

are among the mammals which feed upon American Mountain-Ash.

Related Species—The European Mountain-Ash *(S. aucuparia)* is more commonly available through commercial nurseries and has been widely planted as an ornamental. As with American Mountain-Ash, its fruits are highly attractive to birds, although its foliage is more likely than that of native species to attract Japanese beetles. ■

Rt. 3, Box 213
Marianna, FL 32446

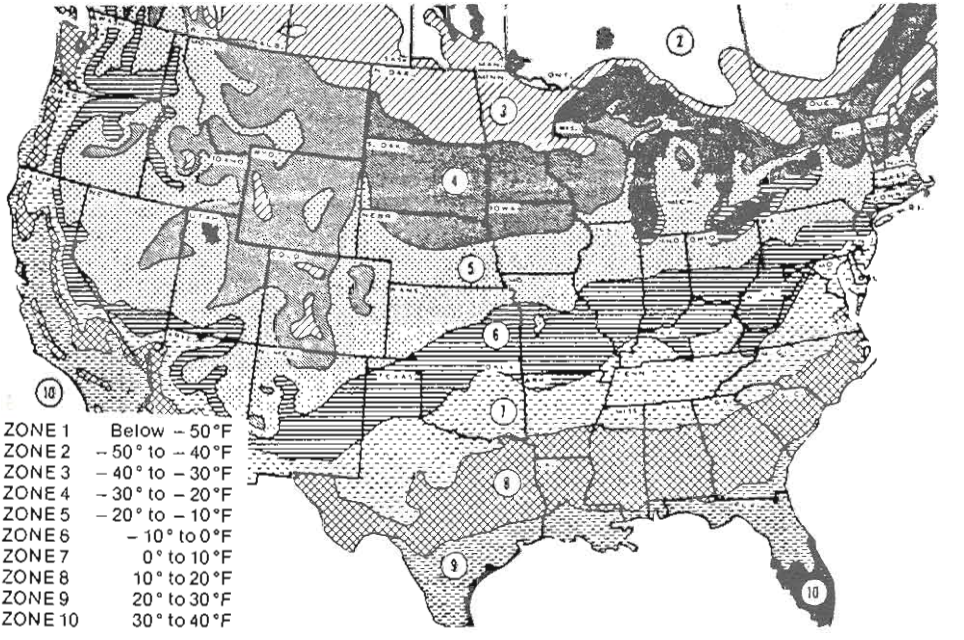


Figure 1. Hardiness Zones for the United States and southern Canada. Temperatures for each zone are the average annual minimum temperatures. When no zones are mentioned with the plant description, plants are hardy anywhere. If a zone is given, it indicates that plants are hardy within the zone and in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

(**HYBRIDS**—continued from page 9)

one female.

The first Western Bluebirds recorded in nesting boxes in 1975 were in the immediate area of this nesting box. Today the population is about 70% Mountain and 30% Western Bluebirds. My observations suggest that these are the first Mountain and Western hybrids reported in our region. ■

Box 794
Ronan, MT 59864

WANTED: Back Issues of *Sialia*

Many new members and libraries desire complete sets of back issues which we are unable to supply. The following issues are needed: Volume 1:1,2; Volume 3:2 and Volume 4:2. Mail these back issues to headquarters and claim a $2.50 tax deduction for each.

North American Bluebird Society
Box 6295
Silver Spring, MD 20906-0295

Certificates of Appreciation Awarded to Two Tennessee Groups

John M. Judy

During the spring of 1986 I awarded certificates of appreciation to two groups in Tennessee on behalf of the North American Bluebird Society. The presentations were made 1 April to the Chattanooga Chapter, Tennessee Ornithological Society (TOS), and 2 April to the Knoxville Chapter, TOS. The reasons for the awards were twofold:

1. Both chapters have actively assisted in the promotion of bluebird conservation during a state-sponsored activity, "Tennessee Homecoming, 1986." This involved the establishment of bluebird trails at "welcome stations" along the interstate system in Tennessee. TOS has also produced a slide program about bluebird conservation.

2. Both chapters have, for the past two years, monitored bluebird trails on hydropower dam reservations maintained by the Tennessee Valley Authority (TVA). The land adjacent to these dams is good bluebird habitat. TVA has established bluebird trails at Fort Loudon, Tellico, Watts Bar, Melton Hill, Douglas, Nickajack, Chickamauga, and Nolichucky Dam Reservations. The coordination of this effort within TVA has been with the Environmental/Energy Education Program and the Wildlife Resources Program. Linda Fowler, nongame biologist, represents the wildlife program, and I represent the Environmental/Energy Education Program in this activity. ■

Chattanooga Chapter of the Tennessee Ornithological Society. Left to right: Linda Fowler (TVA), Jack Doyle, John Judy (NABS), Gene Ryther, Ken Dubke (Conservation Chairman, statewide, TOS), and Lil Dubke.

Knoxville Chapter of the Tennessee Ornithological Society. Top row, left to right: Frank Bills, Barbara Finney (President), John Judy (NABS), J.B. Owen, Jane Beintema. Bottom row: Marcia Davis, Sharon Bostick, Mary Trice, and Linda Fowler (TVA).

The Role of the Volunteer in Wildlife Conservation

Geoffrey L. Holroyd

This paper was presented at the Eighth Annual Conference of the North American Bluebird Society, July 12-13, 1985, at Red Deer, Alberta.

INTRODUCTION

Today, as much as ever, society is dependent upon volunteer effort to address many issues. With declining budgets, government agencies have to abandon some activities and these, together with other traditional roles, will remain the purview of the volunteer for the foreseeable future. In this brief review I look at the role of the nonprofessional in wildlife conservation and assess their achievements and future, as I see them. My point of view of the nonprofessional or volunteer comes from the past 24 years that I have been a volunteer with many wildlife-related organizations and nine years as a professional with the Canadian Wildlife Service. In this paper most of the examples are drawn from ornithology because that is the field I know best. The nonprofessional has promoted wildlife conservation in at least four areas: research, management, education, and politics.

RESEARCH

Field investigations in biology often take several years to complete and are labor intensive while requiring little equipment. Ornithology, in particular, needs many eyes and ears to determine the basic facts such as the timing of migration or even where species occur. Most birds are active during the day and are easy to watch so that valuable behavioral studies can be undertaken by a patient observer. Habits of a species, interactions between species and other aspects of wildlife ecology can be studied with only binoculars, a notebook and patience. Because of this, it is particularly easy to involve volunteers in ornithology.

There are some outstanding examples of individual volunteer contributions to the science of ornithology. Louise de Kiriline Lawrence (1976), a nurse in northern Ontario, has made significant contributions to our knowledge of woodpeckers and other birds. She was the first Canadian woman to be given elective membership in the American Ornithologists Union in recognition of her work. Although such outstanding individual contributions are significant, they are fairly unusual and most volunteers make their contributions through cooperative projects.

Some of the better known cooperative projects include bird banding, Christmas bird counts, breeding bird surveys, bird atlases and nest record cards (Jalkotzy and Holroyd 1985, available from the author). Organizations such as the Long Point Bird Observatory in Ontario coordinate volunteer birders and naturalists. This organization produced an impressive list of scientific publications which were dependent on nonprofessional contributions (Bradstreet and Holroyd 1971, McCracken *et al.* 1981). Other bird observatories and naturalists' clubs across Canada are making comparable contributions to the knowledge of bird ecology.

Each of these ventures is the result of teamwork—a cooperative effort by the members of a team to achieve a common goal. Such teams are centered around people: volunteers with a common interest who are willing to contribute time, skills and money to achieve a goal that individually would be unattainable. Teamwork adds to the recreational enjoyment through a sense of increased accomplishment and comradeship. The collective experiences result in worthwhile scientific contributions that are cost-

effective to society and because there is limited institutional involvement, the cost of salaries and administrative overhead are reduced. Team members encourage a high level of interest and participation, with each member feeding on the energy of coworkers. Because of the wide diversity of backgrounds, teams provide mutually beneficial contacts and many skills are shared. I am a strong believer in teamwork and, in fact, consider myself a product of the team that makes up the Long Point Bird Observatory.

R. Kickling (in Arbib 1985) summed the value of team work in "there is real *enjoyment* in participating in organized field work with a scientific aim. Not just birding. Not just chasing. But *ornithology*." In his history of the British Trust for Ornithology (BTO), Hickling dramatically shows the extensive results of 50 years of cooperative ornithology led by a few professionals but powered by a vast system of volunteers.

Has the time come for a Canadian Trust for Ornithology or a North American Trust for Ornithology? R. Arbib (1985) raises the question "consider what a BTO-type organization on this side of the Atlantic might accomplish!" I suggest it could do for all birds what the North American Bluebird Society (NABS) has and is doing for cavity nesting birds. NABS has expertly joined research by volunteers and professionals with management activities to benefit bluebirds and other cavity nesting species.

MANAGEMENT

Volunteers play a direct role in wildlife management in Canada. I include, here, activities by humans that benefit wildlife and their habitat. Four examples serve to illustrate the individual and team efforts in Alberta.

In 1973, Miles and Beryl Smeeton began the captive breeding of swift fox on their property, the Wildlife Reserve of Western Canada, near Cochrane, Alberta (Russel and Scotter 1984). With the financial assistance of the Elsa Wildlife Appeal, they successfully raised fox pups. This project became a team effort in 1975 when Dr. Stephen Herrero, of the University of Calgary proposed that the progeny be used to reintroduce the species to Canada after an absence of about 40 years. Now, Miles Smeeton, Stephen Herrero, the Canadian Wildlife Service, World Wildlife Fund, Calgary Zoo, Alberta Fish and Wildlife Division, Saskatchewan Wildlife Branch and other cooperators are experimenting with release techniques in southern Alberta and Saskatchewan.

A similar story of an individual effort growing into a team project far bigger than the initiators could ever dream of, started near Red Deer, when Charlie and Winnie Ellis began putting out nesting boxes for the Mountain Bluebird, Purple Martin, Black-capped Chickadee, Tree Swallow, Northern Flicker and House Wren. Their efforts have been transformed into the Ellis Bird Farm Ltd., a nonprofit organization supported by Union Carbide, which employs a biologist and funds conservation and education about bluebirds in Alberta. In southern Alberta, Duncan Mackintosh's individual effort has grown to include 38 volunteers covering bluebird trails which were responsible for fledging about 2000 Mountain Bluebirds in 1985.

In the Edmonton area, Cam Findlay and others, through the John Janzen Nature Center, have distributed 15,000 nesting boxes to volunteers.

Many other wildlife management stories could be told but these examples show how team efforts have made a significant difference, primarily because of volunteers aided by a minimum of government funding. Basically, they show that citizens of Canada care about their wildlife resources and are willing to contribute to management projects.

EDUCATION

Convincing people about the value of wildlife is often very difficult. Several logical arguments have been used to demonstrate that wildlife is important. John Livingston (1981) eloquently discusses and then discredits

each argument that has been used to promote wildlife conservation. His arguments are grouped under three headings: self-interest, ethics, and spirituality. But why are you and I concerned about wildlife? Why did we first become concerned?

A few people may have been convinced by one of the logical arguments, but most people I have talked to reflect Livingston's suggestion. We are concerned about wildlife because of the experiences we have shared with wildlife. Those experiences may be in our backyard, in a neighborhood ravine or at a more distant lake. Regardless of where it might have been or what we saw, it was our own experience that "hooked" us for life.

Effective education should concentrate on providing opportunities for personal experiences and not just relate facts and concepts to the public. The facts can come later. Provide enough information to allow a person to identify and relate to the experience, but, foremost, provide the opportunity for the experience to occur.

My first experience was watching and trying to catch House Sparrows in my backyard. Then a neighborhood boy started catching them and he sold them to me for five cents so I could let them go! With this hook, in 1961 I wrote to the Ontario Bird Banding Association. Within weeks I was off to participate in the Long Point Bird Observatory. I never looked back. The web of nature caught me and the search for knowledge and experiences sucked me in.

The Long Point Bird Observatory on Lake Erie in Ontario provides an opportunity to experience wildlife. The education is provided while the volunteer participates in management and research. Like bluebird trails, it combines these three volunteer roles. This is the ideal marriage: give people a chance to experience wildlife with the bait of some worthwhile project.

Earlier, I suggested a Canadian Trust for Ornithology (not my original idea); I also suggest that more bird observatories in Canada would promote interest in wildlife. Arbib (1985) felt there wasn't a North American Trust for Ornithology because of a lack of interest. "Britain has more dedicated bird watchers per hectare than most parts of our continent; children learn their birds before they lose faith in Father Christmas (Santa Claus) (1985:234)." He is right, but why? Do the majority of Canadians have the same latent interest in wildlife?

John Livingston (1981) answered no. "We wildlifers like to claim that there is a constituency—or several of them—for wildlife preservation, *but* the harsh and unequivocal record shows that we are neither statistically nor politically significant" (p. 22). Fortunately, we now know that we *are* statistically significant.

Filion *et al.* (1983) has published the results of a survey of the value of wildlife to Canadians in 1981. This is mandatory reading. Most Canadians participate in indirect wildlife-related activities such as watching wildlife shows on television, reading wildlife books, buying wildlife art and visiting zoos and game farms (Table 1). Over

Table 1. Number and percentage of Canadians over 15 years of age participating in wildlife-related activities during 1981 (from Filion *et al.* 1983).

Wildlife-related Activity	Participants in millions	Percentage of population
Indirect activity	15.5	83.8
Residential activity	12.3	66.8
Incidental wildlife encounters during other trips	8.1	43.9
Primary nonconsumptive trip or outing	3.6	19.4
Hunting activity	1.8	9.8

half of adult Canadians watch, feed, study or photograph wildlife at their residence or cottage. About half of Canadians view wildlife incidental to other travel or activities. Twenty percent go on trips on which wildlife is the primary interest while 10% are hunters.

Have conservation groups attracted these interested Canadians? Wildlife-related groups have 1.1 million members yet there are four million Canadians who participate in wildlife-related travel and two million hunters. When asked if they were predisposed to participate in nonconsumptive wildlife-related activities, 86% or 16 million Canadians over the age of 15 said yes. Conservation groups need to reassess their approach. Why have organized groups failed to attract almost 15 million interested Canadians? Innovative approaches are needed to stir the unharnessed interest in Canadians and promote their action. "About the only time some people stop to catch even the briefest view of nature is when they may be sitting on a stump in the woods to remove pebbles from their shoes" (Carr 1982:1). Wildlife groups need to scatter more pebbles across society to provide opportunities to those predisposed to get involved.

POLITICS

With 1.1 million members, the wildlife-related groups are a sizable potential political influence. Livingston stated that wildlifers are politically insignificant and I think that he is right. Have they used the right approach? Do they have the facts at their fingertips?

On both sides of the border, governments at all levels are very aware of the cost of government and the size of the public debt. Filion *et al.* (1983) provides economic facts for wildlifers to use in economic debates (Table 2). Active participation in wildlife-related activities is worth $4.2 billion to the Canadian economy. Significantly, nonconsumptive travel contributes nearly twice the value of hunting to the economy. These powerful economic arguments need to be compared to the $16.7 billion tourism industry (Tourism Canada 1985).

The figure of $4.2 billion does not involve the value of wildlife activities (movies, books, art, zoos, game farms, etc.) which involve 15.5 million Canadians nor does it include the value of international tourism related to wildlife. I strongly suspect these other activities together would exceed the $4.2 billion already identified. Wildlife *is* big business worthy of promotion at all levels. If wildlifers have to talk economics, Filion *et al.* (1983) provides the facts. The nonprofessional must now expand the role beyond the other three areas of effort and begin to have the influence in society comparable to their numbers and the economic value of wildlife.

SUMMARY

Volunteers can contribute to wildlife management in four areas: research, management, education and politics. While the role of the volunteer in research and management has been well-established, their involvement needs to be developed in education. Volunteer wildlifers are political neophytes, currently unable to sway governments toward wildlife research, management and education. Volunteers must recognize that they have potential political power which will only be achieved by concerted team efforts.

Volunteers must also bring teamwork to the task of influencing politicians. While individual efforts are commendable, organized efforts are going to be more effective. Wildlifers must also gain a better understanding of the political process and expand their techniques beyond letter-writing campaigns.

The long-term strategy must be one of cooperative teamwork between institutional and volunteer groups where the responsibility for wildlife conservation is shared. Such sharing, however, means that each group has the right to set priorities, decision making must be decentralized, and communication must be open and frequent (Pope 1984).

Keeping wildlife abundant is very or fairly important to 80% of Canadians

Table 2. Total and average expenditures by participants in wildlife-related activities in 1981 (from Filion *et al.* 1983).

Wildlife-related Activity	Total expenditures in million dollars	Annual expenditure per participants in dollars
Primary noncomsumptive trips	2,111	589
All game hunting	1,193	662
Maintaining natural areas	530	455
Residential activity	197	16
Wildlife organizations	119	107
Incidental encounters on other trips	85	10
Total	4,235	N.A.

(Filion *et al.* 1983) and of little or no importance to only 10% of Canadians (10% did not know). Volunteers must increase their efforts to ensure that 80% of Canadians are not disappointed.

Acknowledgments

I thank Ian Stirling and George Scotter of the Canadian Wildlife Service for their comments on earlier drafts of the manuscript.

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Bluebird Slide Show

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

To rent or purchase the bluebird slide show, write to the following address: NABS Slides, Box 6295, Silver Spring, MD 20906-0295. Please allow a month for delivery and, if possible, specify several dates.

"Peek-a-Boo" Bluebird Box

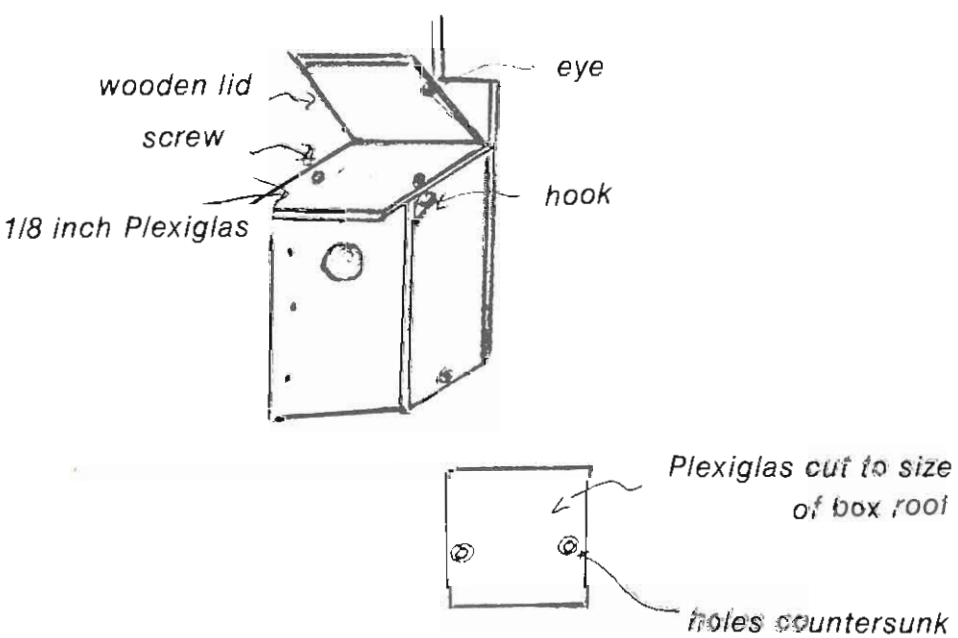
Ted Steucke

The sketch (Fig. 1) shows a standard top-opening bluebird nesting box furnished with a "Peek-a-boo" roof made of Plexiglas. Two small holes are drilled and countersunk in the glass, as shown. The wooden roof is not nailed or screwed down, but rather is hinged by two very small brass hinges. This allows the lid to swing upward giving a view of the nestlings without disturbing the nestlings and avoiding a chance of their fledging early if a front or side panel were opened. A small brass hook and eye may be affixed to hold down the wooden lid over the glass. If more ventilation is needed in the box, extra holes may be drilled as required. To remove the transparent top, remove the two small screws. Plexiglas is inexpensive and may be drilled easily. ■

Heritage Village
Box 350
Gerry, NY 14740

Ted Steucke shown with his standard top-opening bluebird nesting box modified with a Plexiglas top beneath the wooden one.

Figure 1. Peek-a-boo Nesting Box



Bring Back the Bluebirds

Lorne Scott

This paper was presented at the Eighth Annual Conference of the North American Bluebird Society, July 12-13, 1985, in Red Deer, Alberta.

In historical times bluebirds were absent or very rare throughout the northern Great Plains including southern Saskatchewan. Prairie fires frequently raged across the lush grasslands burning to the ground any trees and shrubs that attempted to become established. Thus nesting sites were not available for bluebirds in southern Saskatchewan, and forest lands in the northern part of the province did not provide suitable bluebird habitat. The first Mountain Bluebird nesting record for Saskatchewan occurred in 1895 in the extreme southwest corner of the province. The nest was in a rocky crevice in the rugged badlands. In the late 1800's, settlers began to arrive and carve out homesteads in the rich soil of the prairie grasslands. One of the first activities performed by the settlers was the plowing of fire guards in order to protect their homes and belongings. As more and more settlers arrived and more land succumbed to the plow, prairie fires were greatly reduced. As a result, trees and shrubs began to appear where they had not been evident before.

In the ensuing decades the settlement of Saskatchewan appeared to have a direct benefit to Mountain Bluebirds. The nooks and crannies in the settlers' buildings, along with hollowed out fence posts, mail boxes and the twine box on the old grain binders all provided suitable nesting sites for Mountain Bluebirds. Also, the eventual establishment of mature stands of the native aspen poplar provided many suitable nesting sites for bluebirds and other cavity nesting species. The Mountain Bluebird gradually extended its range northeastward across Saskatchewan and into Manitoba. Records indicate the Mountain Bluebird range has extended east of Winnipeg, Manitoba. During the past century the Mountain Bluebird has extended its range a distance of over 600 miles from southwest Saskatchewan to near the Manitoba-Ontario border.

The range of the Mountain Bluebird overlaps throughout much of southern Manitoba with that of the Eastern Bluebird. Both species are often found nesting in close proximity. During the past 10 to 15 years there have been a number of incidents in which the two species have interbred, producing hybrid Mountain-Eastern Bluebirds. The Eastern Bluebird has been a breeding species in eastern Saskatchewan for many years. For example, a pair nested successfully in Regina in 1916. The Eastern Bluebird has never become a common breeding species in the province. Some years there are a few reports of breeding Eastern Bluebirds, while other years they seem to be absent. Eastern Bluebirds were found nesting in boxes on my bluebird trails in 1966 (2 pairs), 1969 (1 pair), 1973 (3 pairs), 1975 (2 pairs), and 1977 (1 pair). At least two pairs were known to nest in eastern Saskatchewan in 1985.

By the mid 1900's, the future of the Mountain Bluebird looked very promising on the northern Great Plains; however, within the next few decades major changes again occurred in the prairie provinces. After the Great Depression of the 1930's and World War II, a more desirable agricultural climate and the return of servicemen from overseas resulted in a great demand for farm land. Land once deemed unsuitable for growing wheat was being drained, bulldozed and cleared. The aspen poplar groves were being cleared at an ever increasing rate, leaving the land void of trees and shrubs like it used to be during the days of frequent prairie fires. The practice of replacing old rotted fence posts with durable chemically treated posts

or metal ones, the replacement of old buildings containing nooks and crannies with newer and more sophisticated ones and the demise of the old grain binder, all resulted in fewer and fewer nesting sites for the beloved bluebird. The drastic reduction of available nesting sites for the bluebird and other cavity nesting birds coincided with a major influx of starlings and House Sparrows, as these two introduced species rapidly extended their range westward across North America.

It was apparent to some that the future of the Mountain Bluebird looked bleak unless we could help this beautiful and beneficial thrush. In 1957, John and Norah Lane of Brandon, Manitoba, were among the first to embark on a conservation program to help the disappearing bluebirds in the prairie provinces. The construction and placement of artificial nest boxes was and still is the most beneficial way we can help all three bluebird species in North America. Since 1957 the Lanes have personally provided thousands of nest boxes for bluebirds and worked with young people, some of whom have since gone on to careers in wildlife work.

I began building bluebird nest boxes in 1963 at the age of 15. These were set out around my father's farm near Indian Head, Saskatchewan. Between 1963 and 1975, I built a total of 2,000 nest boxes. These were set out on various trails radiating out from Indian Head. During 1974 and 1975, I would drive some 600 miles to check all the boxes. Unfortunately, additional commitments prevented me from maintaining all of the trails after 1975. However, during the past two decades many other people have taken up the rewarding challenge of providing nest boxes not only for bluebirds but for other cavity nesting birds.

In 1968 I obtained a federal migratory bird banding permit. From 1969 to 1985, I banded a total of 6,000 Mountain Bluebirds and 11,000 Tree Swallows. My peak banding years occurred from 1970 to 1975 with 900 bluebirds banded in 1974 and 2,300 Tree Swallows banded in 1975. Through banding, I was able to determine that very few young returned to nest in my boxes in subsequent years. In fact my records indicate that fewer than 1% of the banded young bluebirds and Tree Swallows returned to nest in later years. I also discovered that roughly 25% of nesting females of both species had been banded in previous years. In other words 75% of nesting female Mountain Bluebirds and Tree Swallows appeared to be new birds from outside my study area. This data remained the same for several years, when I banded virtually all nesting females and young. One female Tree Swallow lived to be at least nine years old. It was at least one year old when banded. It was found dead in a nest box within a mile of where it was banded nine years earlier. One female bluebird was found nesting in the same nest box where it was banded six years earlier. I have had one Mountain Bluebird recovery. John Lane discovered one of my banded females nesting in one of his boxes in Manitoba. From the 11,000 banded Tree Swallows, I have had two band recoveries, one in North Dakota and one in Minnesota.

While monitoring the nest boxes a few oddities were observed including a partial albino female Mountain Bluebird. The feathers on her head and upper neck were white in color and her beak was a cream color rather than the usual black. This female and her mate raised two families of normally colored young. The female was only observed one year. A dilute albino young Tree Swallow was fledged in a nest containing six other normally colored young. The odd looking bird was a light brownish tan color all over. One female Mountain Bluebird was banded and observed raising a family while she had only one foot. Another female was affected by a strange fungus-like growth on her beak. She, too, was successful in raising a family. For two consecutive years a female bluebird laid very small eggs which lacked yolks. These eggs were roughly 25% of the size of normal bluebird eggs.

Vandalism is often a problem on bluebird trails. Some nest boxes are shot at, ripped off the post or left with the top removed, exposing the nest and contents to the elements. Someone reported three or four of my nesting boxes for sale at a flea market. Starlings have not been a problem as they are excluded from nest boxes with an entrance hole of 1½ inches in diameter. Over the years House Sparrows have been the greatest enemy of both the bluebirds and swallows. Many adults of both species have been found dead in the nest boxes, victims of the aggressive male sparrow, which simply pecks them on their heads until they succumb to the blows of the thick sharp bill. Six adult Tree Swallows were found dead in one nest box. Sometimes the sparrows build a nest over their victims, while other times the male sparrow doesn't have a mate but defends the nest box in hopes of attracting a mate. On rare occasions male sparrows have attacked and killed young bluebirds in the nest boxes. Unless I can capture and kill the male sparrow, I remove the top from the nest box for a couple of weeks and hope the sparrows will depart.

During the past decade the raccoon population has exploded in southeastern Saskatchewan. Raccoons first arrived in the province around 1960. They remained rare until 1970. By 1980 they were well-established in many areas and were considered a pest. During 1983 and 1984 raccoons were a menace to nesting bluebirds around our farm. They virtually cleaned out every nest box containing eggs, young and nesting females. Canine distemper decimated the raccoon population late in 1984. In the spring of 1985 some 40 nest boxes were replaced on greased metal pipes around the farm. There was no raccoon depredation, perhaps because there were no raccoons around.

Mountain Bluebirds begin to return to Saskatchewan in March, the exact date varies from year to year. March 3 is the earliest spring arrival date that I have recorded. Generally speaking, bluebirds have arrived by March 21, the first day of spring. The males are usually observed a few days before the first females arrive. Migration continues into April, when pairing and nest site selection occurs. Egg laying is usually under way during the first ten days of May. Six or seven eggs are the rule for the first clutch. The incubation period is about 14 days. The young remain in the nest for 17 to 19 days. When they leave the nest they do not return. The parents feed the young for several days after they have left the nest. Within a couple of weeks many of the bluebirds begin to build another nest and the second clutch of eggs usually numbering five or six is laid. By the end of July the second family is on the wing. I have no record of bluebirds attempting a third nesting in Saskatchewan. Bluebirds remain in the province until early October, traveling and feeding in flocks of up to 75 birds. The latest fall date on which I have observed bluebirds is October 26. As a result of the hundreds of volunteers across the prairie province who are building, setting out, cleaning, repairing and monitoring nest boxes, there are probably more bluebirds nesting in the northern Great Plains than at any other time in history. For people of all ages and from all walks of life, the construction and maintenance of bluebird nest boxes has provided many hours of relaxation and enjoyment. Unlike most wildlife conservation work, one can readily observe the fruits of his labor when monitoring bluebird nest boxes. I, like many others, am inspired to continue building, erecting and maintaining bluebird nest boxes each time I discover the beautiful bluebird occupying one of my nest boxes. The future of the bluebird of happiness throughout North America once again looks very promising due to the excellent work of the North American Bluebird Society and the large number of volunteers across the continent committed to assisting the bluebird in its struggle for survival. ■

Box 995
Indian Head, SASK SOG 2KO

Report of Ninth Annual Meeting

Mary D. Janetatos

The Ninth Annual Meeting of the North American Bluebird Society began on Friday morning, October 24, 1986, at the Western Hills Guest Ranch, Sequoyah Station Park, Wagoner, Oklahoma. Bird watching field trips were organized, and leaders Jeri McMahon, Jim Harmon, and Jimmy Norman divided the group and headed off to their respective grounds. Non-birding field trips to nearby museums and historical sites were led by Angela Roth, Joyce Varner, and Robert Majors. Those not on field trips were able to "greet and meet" old and new friends as they perused the exhibits and shopped in the Ranch's gift shop.

Friday evening, Charlotte Jernigan, hostess and emcee for the entire weekend, welcomed the group which numbered approximately 150 and included representatives of 22 states and 3 provinces.

Jimmy Norman, one of the trip leaders, showed his slide program on "Area Wild Flowers and Birds." He explained that the great diversity available to the observer of Oklahoma habitats was due to the unique "panhandle" consisting of the far northwestern part of the state.

The new film by the Walter Berlet Film Company, "Bluebirds—Bring Them Back," was shown. It is a very fine film, beautifully made, which can inspire many to become active bluebirders.

The Tulsa Mountain Cloggers gave a stimulating toe-tapping entertainment. They wore costumes of red and white, the colors of the Canadian flag, to honor the Canadian visitors. Their energetic and skillful rendition was appreciated all the more because Charlotte Jernigan's brother, John Holderman, was among the rollicking cloggers.

Andre Dion appealed to the gathered company to heed bluebird needs in another area: winter food. His talk "Berry Bearing Plants" was to inspire people to appropriate action: planting shrubs and trees appropriate to the local situation.

Keith Kridler presented his "Research on Nesting Boxes of PVC" which also informed the group of his many activities in Mt. Pleasant, Texas.

Because the evening's activities had exceeded the time allotted, Charlotte Jernigan informed us of several program changes and promised to give her "Challenge" the next day.

On Saturday morning, Robin Salsman of the First Baptist Church in Wagoner led the entire group in singing a medley consisting of two stanzas of "America, the Beautiful," and "God Bless America." Charlotte Jernigan offered her inspirational poem, "Challenge," which was so well-received it must be included here [in part, below]:

Bryan Shantz began the program in the morning with his beautiful slide program "Cavity Nesting Birds of Alberta," highlighted by many beautiful photographs of Mountain Bluebirds. Bryan is a prize-winning photographer in addition to being a non-game biologist who works with the Ellis Bird Farm in Lacombe, Alberta, Canada.

Dana Base, Oklahoma's non-game biologist, described the state's bluebird project. Oklahoma's Department of Wildlife Conservation plans to conduct workshops in winter to which the public will be invited in order to build nesting boxes and learn about placement and monitoring. This speaker's

To hear my song, America, you must hear my plea,
Put up a bluebird box to replace my tree.
My tree that was zapped by a chainsaw's power,
My old fence post that had seen its last hour.
My old stump is no longer there,
I'm homeless and baffled and awaiting your care.

show stopper was a caged live albino bluebird for observation by the delighted audience.

Dr. William A. Carter spoke on "Nesting Ecology and Population Trends of the Eastern Bluebird in Oklahoma." Dr. Carter's talk was both scholarly and entertaining, indicative of the need for attention to bluebirds and other native cavity nesting birds.

After a break for coffee, Jay Banta spoke of his work as a wildlife biologist at the U.S. Army base at Fort Sill, Oklahoma. His very fascinating talk described how well wildlife co-existed with Army tanks, guns and military maneuvers on the base. Many times he had observed the "action" going on thunderously around the bluebird boxes he had placed; he also never observed any vandalism.

Dick Tuttle, of Delaware, Ohio, who is the originator of the NABS slide program, "Where Have All the Bluebirds Gone?" made an excellent presentation entitled "A Study of Winter Roost Site Management and the Resultant Use by Eastern Bluebirds in Delaware State Park, Delaware, Ohio." Dick plugs the ventilation slots and drainage holes. The boxes thus treated are widely used in winter by roosting bluebirds.

After lunch, the NABS Annual Business Meeting was held. The slate of nominees for office and members of the board which was sent out with *Sialia* required one change. Because Paulette Badman of Germantown, Maryland, was unable to serve, Nominating Chairman Lillian Lund Files placed the name of Mrs. Alexandria R. Samaras of Wilton, New Hampshire in nomination. The amended slate was elected by unanimous ballot.

A report on the general status of each bluebird species was given. Elsie Eltzroth, of Corvallis, Oregon, described in scholarly and colorful detail the situation faced by Western Bluebirds. She also bemoaned the lack of volunteers in her area to carry on the work so ably begun by Hubert Prescott, now continued by Earl Gillis, her husband, Merlin, and herself. John Rogers of Brewerton, New York, reported on the excellent work being done for the Eastern Bluebird especially by the Upstate New York Bluebird Society. Myrna Pearman of Red Deer, Alberta, told of the phasing out of the ownership by Union Carbide of the famous Ellis Bird Farm and about the nesting success of the Mountain Bluebird.

The NABS Awards for outstanding efforts on behalf of bluebird conservation were presented by NABS Executive Director Mary Janetatos. (See separate report elsewhere in this issue.)

Karen Cole of the Arkansas Fish and Game Commission gave a report relating how, as an urban wildlife biologist, she was able to awaken the interest of bluebird fanciers in her state in order to motivate them to effective action, using NABS resource materials and the publicity channels of the Fish and Game Commission.

Jack Finch and Terry Fisher presented "Winter Feeding of Bluebirds." Jack described collecting and refrigerating dogwood berries and then placing them on top of a nesting box and in a small tray near the entrance hole. Since bluebirds are naturally attracted to cavities and they often return to the box where they raised their young during the previous season, this makes an ideal way in which to feed them in winter.

After a coffee break, Dr. Shirl Brunell, NABS board member-elect and author of *I Hear Bluebirds*, presented her poignant program about two young bluebirds whom she named Samson and Baby Sister. The book makes wonderful bluebird reading and it was a memorable experience to hear the tale firsthand.

Dr. Larry Zeleny, NABS Founder, conducted a "question and answer corner" reminiscent of his *Sialia* feature. He focused on questions regarding the Eastern Bluebird's life cycle. Assisting him were Bryan Shantz, on behalf of Mountain and Western Bluebirds, and Mary Janetatos, who answered questions on the operations and scope of the Society.

Following the Saturday evening banquet the first evening program was

given by Tom Butler entitled "A Falconer's Contribution to the Re-Introduction of Peregrines in North America." This speaker was very well-informed concerning the long history of falconry. Many little-known facts were presented about this controversial subject.

Dr. Shirl Brunell returned to entertain on the "musical saw." What seemed like an impossible feat became a delightful interlude as she performed several haunting melodies on a real saw. Door prizes were awarded which consisted of the following: t-shirts and pins made available by Indian Nations Audubon Society (one of the host groups) and glass bluebirds from Terra Studios of Fayetteville, Arkansas.

Sunday morning saw more field trips. The noon adjournment brought exhilaration at having shared so much with kindred spirits. Space limitations for this article may have deleted your favorite memory of this convention, but we will look forward to meeting again next year for the Tenth Annual Meeting to be held September 18, 19, 20 at the National 4-H Center in Chevy Chase, Maryland. ■

(**SWALLOWS**—continued from page 7)

ern Bluebirds. Each year nearly 60% of the breeding female swallows in the park nested there or were raised there the previous year. Tree Swallows raised in the park are dispersing to nest on other bluebird trails in central Ohio. Swallows and bluebirds live in relative harmony with each other and both species experience conflict with House Wrens.

I would like to add that many visitors travel to Delaware State Park in order to see bluebirds. The Tree Swallows are an added bonus; they are a joy to watch and they make the visit even more enjoyable by controlling populations of many flying insects. ■

ACKNOWLEDGMENTS

The Ohio Department of Natural Resources has given their support to the largest and most productive bluebird trail in central Ohio. I would like to thank Dr. Edward H. Burtt, Jr. for his encouragement, advice, and cooperation with the study and his critical comments on the manuscript.

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ART EDITOR RESIGNS

It is with regret that we announce the resignation of Art Editor Richard L. Woodward who has served the Society since late 1982. His 17 journal covers depicted 11 bird species and included the special fifth anniversary issue. His artistic versatility extended to numerous nature subjects; he regularly illustrated the "plantings" articles and, occasionally, furnished a logo or fillers. We were fortunate in having someone with his talents so generously serving the cause of cavity nester conservation.

As editor I was particularly grateful for his professionalism, his high standards, and his attention to deadlines. I know the Society joins me in thanking him and wishing him success in his new business.

Awards Presented

The North American Bluebird Society awarded plaques and certificates at its Ninth Annual Meeting held at the Western Hills Guest Ranch, Wagoner, Oklahoma on Saturday, October 25, 1986. Several groups and individuals were recognized for their contributions to bluebird conservation

The **John and Norah Lane Award** for an outstanding contribution to bluebird conservation by an individual was made to the following people:

Col. W.R. Robertson, Jr. of Roswell, Georgia, recognizing his work over more than twenty years when he built thousands of nesting boxes, gave many talks on bluebird conservation and helped the Camp Fire organization in the state of Georgia to integrate bluebird conservation into its programs.

Ira **M. Campbell**, of Timberville, Virginia, who, over the course of many years has built, maintained, observed and initiated innovative work with bluebird nesting boxes, especially for blowfly control. He has dealt creatively with problems of bluebird trail management.

Meade "Bluebird" Flinn, who has saturated his hometown of Alberta, Virginia, with his own hundreds of nesting boxes, has written numerous letters to the editor of his local newspaper which resulted in many others in his area becoming actively involved in bluebird conservation and who, at age 90, has been acclaimed by his fellow townfolk as "Mr. Bluebird."

Keith Kridler, of Mt. Pleasant, Texas, who as a young boy began to build bluebird nesting boxes which he placed and monitored on the Kridler Nursery grounds. He expanded his study of bluebirds and activities on their behalf and now as a young man he can point to his innovative PVC boxes dotting the countryside in his area of Texas. His efforts on behalf of bluebirds have received much recognition in the media, including an article in the prestigious *Texas Highways.*

The **Lawrence Zeleny Award** for an outstanding contribution to bluebird conservation by an organization was awarded to the following groups:

The **Arkansas Fish and Game Commission** which, under the leadership of Karen Cole, urban wildlife biologist, has launched a statewide "Save the Bluebird" campaign with great success.

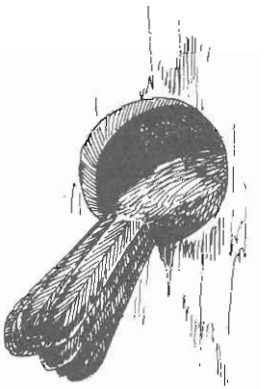
The **New York State Department of Environmental Conservation** which has, through donations to its "Return a Gift to Wildlife Fund," furthered recognition of the plight of its state bird: the Eastern Bluebird. One way it did this was by cooperating with the NYS Chapter of the National Audubon Society in establishing throughout the state a New York Nestbox Network. NYS-DEC, through the good offices of NABS President, Sadie Dorber, has financially assisted the Society in printing its brochure "Where Have All the Bluebirds Gone?"

Framed certificates which were decorated with bluebirds handpainted by NABS board member and artist Fran Hanes and imprinted with calligraphy by NABS President Sadie Dorber, were awarded to **Harry Krueger** of Ore City, Texas, and **Jim Boozer** of Brevard, North Carolina. Mr. Krueger has promoted the cause of bluebird conservation by building, distributing and monitoring hundreds of boxes in his home community and has begun the same activity along Texas interstate highways seeking to join with the trails placed by Keith Kridler. Jim Boozer's bluebird activities have been part of North Carolina's bluebird conservation history, as he has been extremely active over a period of many years. His unique letterhead stationery proclaims "Bluebird Bunks by Boozer."

A beautiful 12-inch diameter ceramic clock, created and hand-painted with bluebirds by Fran Hanes, was presented to **Mrs. Charlotte Jernigan**, a past NABS board member and the local promoter of bluebird conservation in Oklahoma. Mrs. Jernigan was the guiding light behind the NABS Annual Meeting and the articulate, punctual emcee of the weekend. ■

Bluebird Tales

Mary D. Janetatos



With keen anticipation, **Larry Zeleny**, NABS Founder, Treasurer **Chuck Dupree**, NABS Research Chairman **Tedd Gutzke** of Deslacs, ND, and I stepped into the rental car at Tulsa, OK, and headed south for Wagoner where the NABS Ninth Annual Meeting would be held. Chuck was driving, we were all catching up on news when a bird on a fence wire caught my eye. "There's a bird just like a Scissor-tailed Flycatcher," I gasped. "It *is* a scissor-tail," said Chuck, as he stopped the car. We all got out and peered into Chuck's hastily assembled scope. Thus began an exciting weekend.

We soon arrived at **Charlotte** and **Bill Jernigan**'s home and prepared for dinner with board members. The restaurant was right next door and as we walked over we had the thrill of seeing bluebirds perched on signs, wires, and TV antennas. This surely seemed to be "bluebird country" and we looked forward to the rest of the weekend eagerly.

Friday morning I joined a field trip led by **Jimmy Norman**, birder, wild flower enthusiast and naturalist. He took our group to see the Greater Prairie-Chicken across a muddy stubbly corn field whered we were accompanied by a local television cameraman and a reporter.

The "chicken" was sighted: she held her tiny head aloft on a long neck, then another came into view, and soon flocks of them were seen flying from the field where they had been hiding on the ground. All of us excitedly flocked to the spotting scope as those who were seeing it for the first time were interviewed by the TV cameraman, **Paul Staat**, and reporter, **Wendy Burkeen**. The publicity efforts of Charlotte paid off in wonderfully complete coverage in the Tulsa [OK] media. (I understand that they read my letter on TV thanking **Clayton Vaughn**, the Channel 6 TV station newsman who had covered the news of the meeting.)

In the afternoon while other field trips took place, I spent the time visiting with new arrivals. **Barbara** and **William Macer** of Goshen, IN, brought news of Barbara's father, **Orville Rowe**, NABS' cedar and pine nest box supplier, who at age 90 thrives on the orders we send him! Chatting with the bluebirders who had set up exhibits is always great fun—**Harry Krueger** of Ore City, TX, showed me his calling card on which NABS heads a prestigious listing of memberships. His nearby neighbor **Keith** (and wife **Sandy**) **Kridler** were exhibiting samples of Keith's famous PVC nesting box. The Kindlers related travelling through New York state while vacationing and seeing 61 nest boxes on a certain rural property, but had no identification clue for New York attendees **Fran Hanes**, **Lorraine Grindrod** and **John Rogers**. **John** and **Eleanor Findlay** of Montgomery, AL, had interesting bluebird photos.

The Midwest Bluebird Recovery Committee had a fascinating collection of bluebird items which were handled by **Richard** and **Marlys Hjort**, of Chisago City, MN. Among other things there were Peterson boxes, MBRC patches, and R.B. Layton's new book *Bluebirds*, co-authored with **Tina** and **Curtis Drew**. **Hazel Shantz**, of Lacombe, Alberta, was watching over her husband **Bryan**'s latest publication: the "1987 Nest Boxes for Birds Calendar." This beautiful calendar is sure to be well-received. It is a dream come true for NABS, named as a co-operator by Bryan.

Ralph Shook of Godfrey, IL, one of NABS founding directors, paused to say that he was very heartened to realize that this large number of people had come to this weekend meeting from so far away in many cases.

Ray and **Clarine Brinser** of Richmond, VA, were thrilled to be able to take home with them the NABS award plaque given to their friend, **Meade Flinn**, now in his 90s. Clarine and Ray's bluebird involvement must not be overlooked, as the myriads of skillfully made nest boxes from Ray's workshop are legend.

Veteran attendees at the annual meetings included **Laurence** and **Adelaide Sawyer** of Ringgold, GA, and **Ruby** and **Jack Finch** of Bailey, NC. **Christine Helms** of Greenville, NC, recounted her adventures as a NABS speakers bureau member. She had valuable input for Bryan Shantz who has taken on the job of assembling a new NABS slide program on cavity nesting birds.

Members of the very active Bella Vista, Arkansas Bluebird Society who attended were **Mr.** and **Mrs. Chuck Nelson, Charlotte Martin, Mr.** and **Mrs. V. Rodeberg, John** and **Lela Sandfort** and **Mr.** and **Mrs. E.T. Sollenbarger.**

Canadian attendees who hosted the Eighth Annual Meeting were able to relax this year and included **Orest** and **Donna Litivin, Fred Schutz,** and **Maxine O'Riordan** of Alberta. **Mr.** and **Mrs. J.O. Hurst** represented Ontario. **France** and **Andre Dion** and **Andre Cyr** of Quebec completed the Canadian group.

Tedd Gutzke, of Kenmare, ND, described a controversy raging over the use of land on the national wildlife refuge of which he is manager. As is so often the case, recreational interests pressure for more intensive use of natural areas than naturalists desire.

Ohio bluebirders not mentioned elsewhere included **Doug LeVasseur** of Senecaville and **Reid Caldwell** of Lucas. Reid and **Theresa Caldwell** considered the annual meeting to be sufficiently romantic to celebrate their honeymoon with us about five years ago. Now their second child is on the way. Because they are both naturalists, they may be raising blue*birders* as well as blue*birds*!

Malcolm Dorber, husband of NABS President **Sadie Dorber**, was seen ducking out between rain showers for some birding in Sequoyah State Park on whose grounds the Western Hills Guest Ranch was located.

Yes, showers held sway for most of the weekend. Those of us from the East were so unaccustomed to being ready for rain that "yours truly" went to Oklahoma without boots or raincoat. I cannot in any way account for why I also left my binoculars in Silver Spring, MD, but I remain everlastingly grateful to those who lent me boots, jacket and binoculars—and were so gracious as to not make me feel *very* stupid!

We heard a firsthand accolunt of the Oklahoma flooding from **Jeri McMahon** as she drove us around bird watching in her van. Jeri told us that there were really two floods in about one week—the "first a flash flood and then the Flood of '86." During the first flood she watched the torrent of water coursing past her home, carrying her neighbors' chairs and tables and rising menacingly higher until it was over her basement windows and almost even with her first story deck. When the "Flood of '86" happened several days later, the U.S. Army Corps of Engineers warned families to evacuate. Her husband refused to do so, making Jeri extremely nervous. His decision was vindicated as the waters never got as high again.

As the Ninth Annual Meeting came to a close, Charlotte and I reminisced about how wonderfully the meeting had gone. She and Bill had very ably steered the entire proceedings and had been generously assisted by many people. From Manhattan, KS, came **Don Yockey** who helped with the registration table. Birding trip leaders **Jeri McMahon, Jimmy Norman** and **Jim Harmon** provided us with many memorable moments. Other local places of interest were seen under the guidance of **Robert Majors, Angela Roth** and **Joyce Varner.** Bill Jernigan watched over the NABS table, assisted by **David Gill** and **Gail Harris.** This permitted Chuck Dupree and me to meet and talk with the many visitors. **Marion Lyles** and **Mark Weathers** provided clever computer-done welcome signs throughout the lobby. **Bill Jernigan, Caroline Fessler** and **Marian Norman** acted as Charlotte's helping hands. The meeting truly could not have been the success it was without all of their help!

Now, back in Maryland, we face the winter with many warm thoughts of the friends we made in Oklahoma. **Frances Harper** of Carrollton, MS pleads, "Please don't let my *Sialia* fail to be renewed! I thought I had mailed this renewal before we left for Oklahoma. Now my old issues are much more interesting as I read from people I can picture—the meeting was great! My order is for things I had no more room to pack for the return trip home."

Phyllis Williams and her veterinarian husband, **Dr. R.B. Williams** of East Moline, IL, say, "Thank you very, very much for such a meaningful meeting in Oklahoma. Both of us continue to recall joyful memories about all of you and the meeting."

A note from **Elouise DiGiacomo** summed up what the annual meeting, and indeed bluebirding, is all about. She said, "My garden club (members) here in McAlester, OK, are so excited about the NABS program and we are anxious to start more trails here." With that, the "Treeing Walkers" ordered 26 bluebird nesting boxes. ■

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:

In all the discussions about snake protection for bluebird boxes, I have not seen the one suggestion which was made to me which is the use of barbed wire wrapped tightly around the pole 18 inches below the box and then wrapped loosely around the bottom of the box itself and upwards a bit around the back of the box. With no evidence to the contrary, I suspect that it is successful.

Sara Loken
Reva, Virginia

Dear Editor:

We moved to York, PA from Milwaukee, WI four years ago and saw our first bluebird that year. I bought two bluebird boxes from a lady member of NABS after reading an article in the local paper. Since then we have had bluebirds each year and one year had two families. Each year they sit, male and female, in the tree overlooking the deck and watch us.

M. Quinton
York, Pennsylvania

Dear Editor:

All stories seem to be from northern states; hope you will have some from southern states.

Jean D. Morris
St. Joseph, Louisiana

Dear Jean Morris:

We can't do much about the geographical mix of articles as they generally reflect what we receive. We would certainly be receptive to more material from your part of the country.

Dear Editor:

I am a helper of bluebirds. I went into a new area where there were no bluebird nests and have 12 nests of my own. I have given all my neighbors nesting boxes already mounted on cedar posts ready to put into the ground. I feed bluebirds suet, peanut butter and raisins in the winter so my bluebirds stay with me year-round.

Charlene Collum
Houston, Texas

Dear Editor:

I hope that a lot of people will be able to attract bluebirds to their residences on an almost daily basis as we did last winter. By mid-December the bluebirds' interest in our feeder seemed to pick up markedly. Perhaps, by then, they were having more difficulty finding berries, their traditional winter food. They seemed to like our combination of Miracle Meal in the feeder and suet on the ground. And, in the case of a severe blizzard, the feeder could be a life-saver for many bluebirds.

Morris M. Green, Jr.
Walkersville, Maryland

Dear Editor:

I didn't have any luck again this year with bluebirds, maybe next year. The Tree Swallows returned on 1 April. Our martin house has been up for two years, but no tenants, just visitors.

This year I got a bag of feathers from the neighbor one-half mile away. I washed them in a pillow case (no soap) and dried them in the dryer so that they came out a pretty white and fluffy. I tossed a few out at a time. I had a three-ring circus with the birds. All kinds came to pick them up which was a delight.

Ethelyn Baker
Madrid, New York

Dear Editor:

In the Autumn 1983 issue you deigned to print portions of my letter concerning "fake" holes with your tentative caution, "*Proof* of its value, of course, would require a series of boxes with painted holes along with a control group of normal boxes." (p. 153) *Proof* underlined etc., as though the spots themselves could be a "Kiss of Death."

Results on my trail are as follows: 9 years to increase occupancy from approximately 12% to 19%. Then, 1½ years to jump to 43% with fake holes. Recently, another trail operator at a county park who actually has time and helped to count fledglings, experimented with "fake" holes on approximately half their boxes (the trail consists of 102 boxes) and in one year *doubled* the number of birds fledged.

Scott Hess
York, Pennsylvania

Dear Scott Hess:

Thanks for letting us know the effectiveness of the "fake" holes that you painted on the exposed sides of nesting boxes. You may recall that I asked any readers who tried this idea to share their results—to date there has been no feedback. Perhaps the success you cite will encourage other trail operators to try this suggestion.

Dear Editor:

We feel wonderful about the progress we have made with the assistance received from various of your publications and books. For several years we had only sparrows interested in our bluebird boxes. In 1983, finally a pair of bluebirds nested, only to have a sparrow kill the female on the nest. That's when we learned from you about trapping which has been a tremendous help to us. In 1984, with one pair of bluebirds, four babies fledged. In 1985, with two pairs, 14 young fledged! We are still learning and hope for increased success.

Dana Blagg
Stilwell, Kansas

Dear Editor:

I was shocked to see the diagrams accompanying "The Story of My Bluebird Trail" 8(3):85-88 showing a nesting box *with a perch attached.* I thought Dr. Zeleny had recommended no perch and that is what I have been advocating in all of my presentations.

Margaret L. Lamb
Oakfield, New York

Dear Margaret Lamb:

Sorry the diagrams in the article cited upset you. You are correct that the Society does not recommend perches on nesting boxes. The article was providing directions for snake-proofing a box and was not a construction diagram for a bluebird nesting box. We normally do not alter diagrams accompanying articles. I regret that these illustrations were a source of confusion and thank you for clarifying the point for our readers.

Dear Editor:

My four bluebird boxes with streamers never had House Sparrows even *looking* during the past season. I did have one very persistent wren, but did have two separate houses each with successful bluebirds broods in an area with a high endemic sparrow population.

John T. Toppen, M.D.
Harrison, Ohio

Looking For A Home

Pretty bluebird looking for a home
It makes me so sad to think you roam
Searching for a place to build a nest;
Old cavities in trees are usually best.

But I have a house built just for you
My fine feathered friend with a coat of blue.
Size is right, as is height from the ground.
A more welcome tenant could not be found.

I would feed you well and love you much.
Your plumage would add a colorful touch.
The rent is free and the contract long.
Come, claim your house soon and sing me a song.

Edna B. Willis

ON HORSEBACK

You jog along and the flash of blue
Makes a jungle impression of tropical hue.
Flitting ahead in the enchanted scene
A bluebird comes into focus as in a dream.

And all that effort to find a place
To mount the box the south wind to face
Seems such a very simple thing
To help the bluebird in the spring.

While we're rewarded as the season moves on
By the gentle vision and sound of its song.

John M. Edwards

ART CREDITS

Jon E. Boone: 2, 38
Suzanne Pennell Turner: 5, 8, 11, 36
Richard L. Woodward: 20

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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 other 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) and Senior (over 60), $7.50; Regular, $15; Sustaining, $30; Supporting, $50; Contributing, $100; Corporate, $100; Donor, $250. Add $2 per year for Canada and Mexico and $3 per year for other countries (surface mail). U.S. funds only, please. Amounts over $6 are tax deductible.

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