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

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

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Sialia welcomes the submission of articles, artwork and photographs for publication. Although this journal is dedicated primarily to the bluebird, material relating to all native cavity nesting species will be considered. Manuscripts should be neatly typed and double-spaced. All material submitted for publication is subject to editing or rewriting. Include a duplicate copy if you wish to proof the manuscript before publication. All manuscripts will be acknowledged. Black and white glossy photographs are preferred. Print the subject, names of individuals pictured, photographer and return address on back of each photograph. Before preparing tables, graphs or other display material, please check with the editor. 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.
Are you like me? Every time I pick up a book on wildlife or gardening I turn quickly to the index to see if bluebirds are mentioned.

That's exactly what I did on Christmas when we received one of our favorite gifts—Green Thoughts by Eleanor Perenyi, a lovely collection of articles on gardening published by Random House in 1981. In a short chapter on birds she writes, "If the bluebird, 'who carries the sky on his back' in Thoreau's fine phrase, is getting rare as the roc in this part of New England, it isn't for want of feeders, but because he isn't among those fittest to survive the hostile world we have created. I have watched a Boy Scout troop attaching bluebird houses to trees along the road that connects us to interstate 95. They might as well have been building tepees to entice Indians. The birds and Indians are dying out for not dissimilar reasons."

She then declares that the rare visitations of bluebirds make one feel like "one of the chosen," adding "quite unjustifiably."

Why unjustifiably? That very morning my husband had called me to a window whispering, "Look, bluebirds!" There were six of the most beautiful bluebirds one could ever hope to see inspecting a nesting box in the front yard. It had been a month since I'd caught sight of one on my daily walks at Gunston Hall, although they do spend the winter with us here in Virginia. As they flew around for five minutes we stood admiring them. I felt like "one of the chosen" on that beautiful Christmas Day!

A delightful article in Smithsonian magazine (April, 1974) by Brooks Atkinson comes to mind. He wrote that bluebirds are "one of the splendors of nature" and that the "modest serenade of the bluebird still dismisses our winter gently" and tells us "pleasanter days are coming soon." We certainly can agree with him that no other bird brings us such "quiet and composed loveliness."

Lamenting the scarcity of bluebirds Mr. Atkinson also wrote, "Let me explain my anxiety about bluebirds. I need them; they don't need me."

Ah, but they do need us! Let's get those nesting boxes ready for them. And when a mating pair chooses to live in one of your boxes, you shall definitely have all the excitement and blessing of feeling that you are one of the chosen.

---

BLUEBIRD SLIDE SHOW

The NABS slide show is available for rental at $5.00 or purchase at $50.00. The show consists of 141 collated plastic-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 show, write to Dick Tuttle, NABS Education Committee, 295 W. Central Ave., Delaware, OH 43015.
Building Nests for Great Gray Owls

Robert W. Nero

This paper was presented at the Great Northern Plains Regional Meeting of the North American Bluebird Society at Brandon, Manitoba, on 27 June, 1981. The subject illustrates the Society's interest in any native North American bird species that benefits from man's aid.

Sport, science, dedication, redirected sexual energy? Whatever the reason, Herb Copland and I have been making bigger and better nests for owls since July 1970. The nest we built on 12 December, 1976, however, I swore would be the last. After having perched for two hours in the top of a Tamarack tree on a windy day with the temperature at –15°F, I began to lose interest in nest building. Fortunately, I was just finishing patting the last bits of nest lining into place and was soon on the ground shaking and puffing, hovering over a warming fire. Taskmaster that he is, Herb insisted on carefully stowing away all the gear in the packsack (which I would carry) before we began making our way out of the bog. By the time we reached the car it was 3:30 p.m. and the temperature was falling fast. I was cold and hungry as well as anxious to get out of the tearing wind. We had had nothing to eat or drink since leaving Winnipeg at 8:00 a.m. We scrambled into the car, started the motor, and then hurriedly fished about for our lunches.

Each year since a hot day in July 1970, when we installed our first man-made nest, Herb and I have been building nests to attract Great Gray Owls (Strix nebulosa). We now have more than 100 man-made or reconstructed natural nests scattered in the woods between Lac du Bonnet, Manitoba, and the bogslands of northern Minnesota.

We have been assisted in this arduous endeavor, on occasion, by Bob Taylor and by my son, Woody, now working on his Ph.D. at the University of Toronto. Woody helped during several winters, quietly going along with my obsession to build "just one more nest." Sometimes we worked at temperatures as low as –30°F. If there were no branches on an otherwise suitable tree, it was Woody's task to drive in a dozen or so eight-inch spikes—a tough job, for the frozen Tamarack trunks were nearly impenetrable. Once this was accomplished I'd climb the tree, lower a rope and Woody would send up the necessary equipment (saw, wire-mesh screen, wire, pliers, etc.), as well as the branches and twigs required to make a nest. Woody insisted that standing on the ground in subzero temperatures waiting to send up another load of carefully selected twigs was colder than working on the nest. Perched in a swaying treetop, fumbling with pliers, wire and brittle twigs, I didn't always agree. One of our colleagues, Raymond Tuokko, has built more than 40 nests by himself in the Lac du Bonnet area.

We owe thanks to a few other volunteer helpers including my wife, Ruth, and our youngest son, Brook, but most of the work has been carried out by Ray Tuokko, Herb Copland and me. In 1977, taking advantage of the relatively mild weather and lack of snow, we outdid all previous efforts. Between 21 November and 19 December, we repaired six nests, including four that had been occupied by Great Gray Owls in summer 1976, and built twelve new nests. I haven't counted the hours involved in this effort, but the work at each nest lasted from one to three hours. In some cases it took more effort to repair an old natural nest than to build a new one. Most of our time, however, always has been spent.
in searching suitable nesting habitat, looking for a tree of the right shape in which to build a nest. The ideal tree, from our standpoint, is a deformed Tamarack [American Larch] (Larix laricina) with a crown of upright limbs forming a cradle in which a nest can be constructed. In one case we spent an entire day searching through perfect habitat in an extensive Tamarack bog without finding a suitable tree. One can well ask, why all this effort to build nests for owls?

By nature Great Gray Owls (and several other owl species) use old or vacated nests built by other birds, mainly hawks and crows. In our area American Crows (Corvus brachyrhynchos), Northern Ravens (Corvus corax), Northern Goshawks (Accipter gentilis), Red-tailed Hawks (Buteo jamaicensis), and Broad-winged Hawks (Buteo platypterus) are probably responsible for most natural nests used by Great Gray Owls. A species which depends for a nesting site on such nests has to use whatever it can find. Often, a season of use results in the complete deterioration of a nest, so the following year the owls have to find a new site. Hawks and crows readily build new nests as required, so usually there are spare nests. We have assumed that our man-made nests are equally satisfactory or possibly even better than natural nesting sites. Should Great Gray Owls decide to occupy one of our nests, we are then able to study, photograph and, finally, band the offspring. On more than two dozen occasions Great Gray Owls have used our nests. Of forty-five recent nestlings (1974-1981), twenty-six were in man-made nests, nine in rebuilt nests, and ten in natural nests. One winter, of five nests built along a mile stretch of road in December, three were occupied by Great Gray Owls in April.

Try to imagine what it feels like to be hiking through a bog in April following a trail to one of our nests as we check for possible occupancy. Great Gray Owls are rare birds. How should we hope to entice a pair from the remote boglands to one of our constructions? Stumbling through a Tamarack bog suddenly there is that great black, uprooted mass of peat and roots—the deadfall that marks the point of observation of a nest. Stopping to wipe our glasses and binoculars dry, for it is raining slightly, we move into position, focus on the still distant nest and there is an owl on our nest. It is just a big head atop a mass of twigs, but unmistakably it is a Great Gray Owl lying low in the nest. It is a supreme moment, a time of exultation; the taste of success is sweet. We grin and pound each other’s shoulders, shake hands and then slowly move forward savoring each moment as we make our way to the nest.

Finding any nesting of Great Gray Owls is a rare and valuable discovery, but having these birds select one of our nests is especially satisfying. A nest built about 60 miles east of Winnipeg one day in mid-December 1975 was occupied by Great Grays the following April, less than four months later. Though only about 15 feet off the ground this nest successfully fledged five owlets. Because of its location and early discovery by us, the site was the focus of attention by graduate student, Michael Collins. The latter individual, working under Spencer G. Sealy at the University of Manitoba, studied the Great Gray Owl as a thesis subject toward a Master’s degree in zoology. Collins set up camp near the nest in late April living day and night not more than 50 feet from the nest. From his blind he was able to record events, several times sitting up through the cold, damp night to record the voices of the owls with a tape recorder. “Well,” he said, “It was too cold to sleep anyway.” The female at this nest became so used to him that frequently he had to push her off the nest when he wanted to weigh the young! Often she sat on one side of the nest while he weighed the nestlings on a balance scale set inside the nest.

One day in May, Betty Struthers, who had helped me to build this particular nest on a cold December afternoon, was given a special invitation to hike the quarter-mile into the Tamarack bog to observe the bird. We had
been extremely cautious about revealing the location of our nests and have had a fairly restrictive policy toward visitors, but, in this case, I thought she deserved to see the results of our mutual efforts. She had never seen a Great Gray Owl, so it was a special treat for me to watch her as we neared the site and heard the female hooting. It had been a long, slow walk in: the bog was wet and soggy, there were numerous deadfalls to climb over, and there were hidden roots that made us wince and stagger for balance. Once at the nest site seated on a log the difficult trip was soon forgotten. There just a few yards in front of us was the nest: a platform of sticks (wired together) resting on the fork of an old, twisted tree. Sitting upright on the platform were five gray and white downy young. They varied greatly in size for eggs are laid at three-day intervals (or more) and incubation begins with the laying of the first egg. Hence the oldest and largest nestling was three times the size of the last hatched.

The female, with her piercing yellow eyes, sat nearby in a tree watching us with an intent look that made me feel uneasy. Miss Struthers, shaking her head and grinning widely, said she was amazed at the size of the birds. I quietly explained to her that the Great Gray Owl is the largest of all North American owls with a wingspan of five feet. Although its wingspan equals that of an eagle, its actual body size is small. Birds may weigh two or three pounds or less. Females, as is the rule with raptors, are larger than males. The bird’s bulky form partly results from the great quantity of long, downy feathers which insulates it against the severe cold of subarctic winters, for it occurs north to the treeline. It is well adapted to spending the winter in its home range, whether on the Alaskan slopes, along the shores of Hudson Bay, or in the bogs of southern Manitoba. Because of its almost total dependence on vole and mouse populations, the Great Gray Owl becomes a nomad when these small rodents are scarce, moving to wherever it can find food. One year

it may be present in some numbers; the next year, driven by hunger, it may be far away in different woods.

Our novice observer also said she thought it was surprising that these big birds would make their home in this sparse grove of small Tamarack trees. By now, however, we have come to appreciate the ability of these birds to maneuver through fairly dense tree stands, so we regard the Tamarack bog as prime habitat. So far we have seen only the female and young, but soon the male flew to the nest. Shyer than the female, the male is seldom seen except for the brief period of the food exchange. He soon becomes used to the presence of observers and with little hesitation flies straight to the nest, vole dangling from his bill. Though I have seen the male bring food to the female numerous times at several nests, the event has never failed to impress me with its beauty and solemnity. It is a crucial moment, for the delivery of food by the male is the basis
for rearing the young and feeding the female. Usually, the whole event takes place quickly; the male lands hard on the edge of the nest, holds the prey out to the female and, as soon as she has taken it from his bill, he flies off into the woods.

The quickest occupancy of a man-made nest occurred less than four weeks after it had been built. Ray Tuokko observed a pair of Great Grays in courtship behavior in February 1979. He hurriedly constructed a nest nearby in a small clump of Black Spruce (*Picea mariana*)-Tamarack surrounded by White Ash (*Fraxinus americana*) and open, grassy fields using a large live Tamarack as the nest tree. He found the nest occupied by an incubating female on 12 March. This suggests that the birds found the nest shortly after it had been installed and were quick to take advantage of its presence. It was a successful nesting. On this basis I have advised interested persons in Minnesota and northwestern Wisconsin to build nests in suitable habitat close to where birds have been seen in winter. A nest built in Aitken County, Minnesota, by Steve Loch was occupied within a few months. Don Follen, Sr., has built a number of nests in Wisconsin and is continuing his efforts to prove that the area is within the breeding range of the Great Gray Owl. Recently, I learned that a nest built at Moosonee, Ontario, was occupied successfully by this species.

Our nest building techniques incorporate several features. First, we build in Tamarack woodlands because we believe that this is prime habitat for owls. Secondly, because Tamaracks shed their needles in fall, nests in this tree species are conspicuous over a long period of time. (Nests built in deciduous hardwoods may also be successful because Great Gray Owls have often been found nesting in such situations.) We like to build in deformed Tamarack trees because such trees are conspicuous in themselves, and because the presence of a natural cradle of three or more limbs makes it relatively easy to construct a nest in such a situation. Moreover, Tamarack branches are long-lasting so our nests are likely to remain in good condition for several years. We build a nest that closely resembles a natural nest often using a piece of stucco-wire screen as a base, fastening larger branches or bundles of twigs onto the tree and the support limbs with heavy wire. In almost all cases our nests are strong enough to support the weight of a person, and often that is how we pack the branches and twigs into position. Fine, crushed dead Tamarack twigs and bark, and sometimes moss are used to make a dense lining. The whole structure is about 18 to 24 inches in diameter with a depth of one to two feet. We invariably build a nest so that there is a shallow depression in the center of the nest. I am convinced that two or three nests in one area, about 100 yards apart, are better than one nest by itself. The mother appears to enjoy visiting first one nest and then another.

Robert Nero constructing a nest for Great Gray Owls.
until she decides which one to use. In our area nests have been visited by owls as early as mid-February. Accordingly, nests built in early fall are exposed to owls over a long period and are most likely to be found and used; however, nests can be constructed at any suitable time. It is simply easier to locate a satisfactory nest tree in fall and winter.

It is partly for the fun and pleasure of seeing and studying Great Gray Owls at a nesting site that we have spent so much time and effort building nests. Obviously, there must be many other nests that are in use but which we have been unable to find; still, in many areas of apparently suitable habitat, we have been unable to find any natural nests. We have presumed that a man-made nest in such a place would have a greater chance of being occupied by Great Grays. Almost all of our nests have been built in Tamarack bogs, far enough back from roads to reduce the hazard of discovery by other persons. Nest heights have varied from about 15 to 25 feet above ground, depending on the location of a tree and a suitable arrangement of limbs. Although we employ wire-mesh screen and fasten the platform to the tree for security, in the end, our nests look much like natural nests. A man-made nest is, however, a more permanent structure.

Where will it all end? My wife asked me recently how many more nests we intend to build. True, it has reached a stage where it is becoming increasingly difficult to check all the man-made and natural nests we have under observation, but this is a long-term project and only now are we reaching a point where we can expect to get some return on banded birds. (We have banded 351 Great Gray Owls.) By banding young and adults at nests and by trapping and banding birds in winter, we hope to get some perspective on the relationship between resident populations, and birds that may be immigrants from farther north (birds that come down in some winters together with other Boreal Forest birds such as Hawk Owls [Surnia ulula]).

We now know that the species is locally resident in suitable habitat from Pine Falls, Manitoba, south into Minnesota. This is our main study area covering approximately 6,800 square miles. Within this region, especially in Black Spruce-Tamarack bog country, we have been able to find birds each year since 1968 when we first became interested in the subject. The Great Gray Owl, occurring from western Ontario west to British Columbia and down into the mountainous regions of some of the western states, is nowhere common. In many areas it is considered the rarest of owls. The American Birding Association lists it as number six on a list of fifty “most wanted birds.” Birders have traveled thousands of miles hoping to see their first Great Gray Owl. Now that it has become known that these birds occur regularly in southeastern Manitoba, the species has become almost a tourist attraction in this area. Each year I get requests from as far away as South
Great Gray Owl eggs in a man-made nest.

Carolina and Texas asking when to come to see Great Gray Owls.

Because of the distance between nests and the size of the study area, we drive many miles annually in search of birds and nests. In 1974, for example, between January and June, I drove more than 10,000 miles. And that was on weekends alone (and in my own car). We have been conducting this study mainly with personal time and funds, though Spencer Sealy and Michael Collins have, during two years, had funds from several sources, including the National Research Council and the Manitoba Department of Natural Resources. In 1975 I received personal grants from the Manitoba Naturalists Society and the Seven Sisters Falls Wildlife Association to help defray travel costs. This support, which I greatly appreciated, indicates the increased interest being shown in non-game species by both kinds of groups. For the past two years I have received financial support from the Manitoba Department of Natural Resources.

Man-made nests built within the known breeding range of the Great Gray Owl are useful in providing opportunity to study and document the nesting of this species. Nests should also be built in areas where the species has been seen in summer. Owls far from breeding grounds in winter, say in southern Ontario and Quebec, may be attracted to stay and nest if nests are provided for them, especially in areas where mice and voles are abundant. The Great Gray Owl may well nest across the breadth of Ontario and Quebec, although at this time there are nest records only for western Ontario. It would be interesting to see if owls would occupy nests within the vast Ontario-Quebec region. They may already breed in this area, thus accounting for the numerous winter invasions in southern Ontario and Quebec and the New England states. Nests may not be a limiting factor in most areas, but by building a nest once can help document the breeding range of this exciting species.

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1495 St. James Street
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Canada R3H OW9

The Rockingham Bird Club is trying to help the bluebird. In addition to monitoring several bluebird trails we carry on an extensive public education effort. Our slide programs include "The Birds of Rockingham County" and "Along the Shenandoah Bluebird Trail" produced by Mrs. Mary Smith and Mrs. Kathleen Finnegan. By presenting these and other programs to school groups, community clubs and church organizations, we have been successful in creating an awareness of the role that birds play in our lives.

Over the past 11 years I have developed and maintained a bluebird trail of over 100 boxes. My trail has suffered problems familiar to other trail operators: vandals, wasps, ants, mice, snakes, European Starlings, House Sparrows, raccoons, infertile eggs and blowfly larvae (Table 1).

I read with much interest Lawrence Zeleny's article, "How Bluebirds React to Infertile Eggs," *Sialia* 3:130-131, because I also had had an experience with a female bluebird incubating infertile eggs for an extended period.

By 15 May, 1979, there were five eggs in the nest. I monitor the trail every two weeks during the nesting season so, by the fourth week, I knew the eggs were infertile. I wanted to see how long the female would incubate them, so I did not disturb the nest. The male watched nearby until 10 July after which he was no longer seen. On 21 August I finally removed the eggs and nest.

During the summer of 1981 one nesting box contained an abandoned nest with four infertile eggs. A House Sparrow had built a nest in a nearby box, so I removed her eggs and replaced them with the infertile bluebird eggs. That female sparrow sat on those eggs for weeks, then she laid two eggs. With that she was evicted immediately—eggs, nest and all.

Table 1. Shenandoah Bluebird Trail Nesting Box Results, 1981

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total nesting boxes on trail</td>
<td>100</td>
</tr>
<tr>
<td>Total Eastern Bluebird nests</td>
<td>69</td>
</tr>
<tr>
<td>Bluebird eggs laid</td>
<td>276</td>
</tr>
<tr>
<td>Bluebird eggs hatched</td>
<td>194</td>
</tr>
<tr>
<td>Bluebird eggs abandoned</td>
<td>13</td>
</tr>
<tr>
<td>Bluebirds fledged</td>
<td>182</td>
</tr>
<tr>
<td>Bluebird eggs destroyed by raccoons</td>
<td>20</td>
</tr>
<tr>
<td>Bluebird eggs destroyed by snakes</td>
<td>44</td>
</tr>
<tr>
<td>Bluebird eggs destroyed by House Sparrows</td>
<td>5</td>
</tr>
<tr>
<td>House Sparrow nests removed</td>
<td>208</td>
</tr>
<tr>
<td>Nestlings destroyed by blowfly larvae</td>
<td>12</td>
</tr>
<tr>
<td>Tree Swallows fledged</td>
<td>17</td>
</tr>
<tr>
<td>Carolina Chickadees fledged</td>
<td>14</td>
</tr>
<tr>
<td>House Wrens fledged</td>
<td>8</td>
</tr>
</tbody>
</table>
Table 2. Results from 10 Open-Top Nesting Boxes on Shenandoah Bluebird Trail, 1981.

<table>
<thead>
<tr>
<th>Box No.</th>
<th>Eggs Laid</th>
<th>Species</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (1st nesting)</td>
<td>5</td>
<td>Eastern Bluebird</td>
<td>5 fledged</td>
</tr>
<tr>
<td>(2nd nesting)</td>
<td>4</td>
<td>Eastern Bluebird</td>
<td>3 fledged</td>
</tr>
<tr>
<td>24</td>
<td>3</td>
<td>House Sparrow</td>
<td>Nest removed</td>
</tr>
<tr>
<td>27</td>
<td>5</td>
<td>House Sparrow</td>
<td>Nest removed</td>
</tr>
<tr>
<td>34</td>
<td>3</td>
<td>Eastern Bluebird</td>
<td>Nest abandoned</td>
</tr>
<tr>
<td>70</td>
<td>7</td>
<td>House Sparrow</td>
<td>Nest removed</td>
</tr>
<tr>
<td>90</td>
<td>6</td>
<td>Eastern Bluebird</td>
<td>6 fledged</td>
</tr>
<tr>
<td>4 boxes ......</td>
<td>0</td>
<td>None</td>
<td>No nests</td>
</tr>
</tbody>
</table>

I have tried the experimental “open top” (2½ inch opening covered with hardware cloth) on ten boxes to discourage House Sparrows. For me it has not been successful (Table 2). The sparrow, in building the nest, uses long stems of grass to make a canopy beneath the opening similar to the nest of a Carolina Wren. By creating a canopy, the sparrow keeps the light out. Although bluebirds will build in a nesting box with an open top, during extended rainy periods the nest will stay very wet. I am now using solid tops again.

The blowfly seems to be a nationwide problem for bluebirds. Although using 1% rotenone helps to retard this parasite, I still have fatalities caused by the larvae. Because the larvae stay on the bottom of the nest except when feeding on nestlings, it is almost impossible to remove them while the birds are nesting.

Using this theory I made two experimental nesting boxes, both with extended bottoms (Fig. 1). Each box had the same dimensions as a regular nesting box but with an extended depth of 3/4 inch which was hinged on one side. The bottom was fastened on the opposite side with a hook and eye. Between the nesting box and the extended bottom, I put a piece of 3/8 inch hardware cloth 5½ inches square thinking that the larvae would crawl to the bottom of the nest, fall through the holes in the hardware cloth, and not be able to climb back up to the nest.

Several questions needed to be answered. Would bluebirds build on the hardware cloth? Would the eggs hatch with that much air space under the nest?

I exchanged the experimental boxes for two in which I had lost fledglings the previous year. On 3 June, to my surprise, one of the extended bottom boxes contained a bluebird nest with four eggs. By 14 July the brood had fledged successfully.

The other experimental box had two bluebird eggs in it on 30 June. They hatched successfully and fledged by 11 August. Although one nesting box was located close to a farmer’s barn, House Sparrows had not tried to build a nest in it; in fact, they did not attempt to build in either box.

After the birds fledged I examined the nests and the extended bottom in each of the two boxes. I found a few blowfly larvae in the fine nesting material but many more in the extended bottom. I lost only 12 nestling bluebirds to blowfly parasitism although larvae were found in almost every nest.

These first results were so encouraging that I’m planning to put false bottoms in 25 more nesting boxes for the 1982 breeding season. I will continue to put rotenone in the boxes, however. After all, the blowfly larvae will need something to eat!

236 Church Street
Timberville, VA 22853

Sialia, Spring 1982
Use a nesting box which has 4" x 4" inside dimensions. To make the false bottom, use a strip of galvanized metal 1" wide and 12½" long. Bend 1/4" at a 90° angle to create a piece 3/4" x 1/4" x 12 1/2". Cut the 1/4" edge every 3" and bend it to make a 3" square (inside dimension; 3 1/2" square outside), using the extra 1/2" to overlap. Fasten with a pop rivet or small bolt.

Cut a piece of 3/8" hardware cloth a little less than 4" square. To fasten the hardware cloth to the metal square cut twice about 1/8" apart near the middle of each side of the 1/4" flange of the metal square to make a tab. Place the hardware cloth on the metal square and bend the 1/8" tab over the wires of the hardware cloth.

This false bottom can be used in any type of nesting box whether it is top, bottom, front or side-opening.
Eastern Bluebird Population Density in the North Central Portion of Its Breeding Range

Delos C. Dupree

The Breeding Bird Survey (BBS), sponsored by the United States Fish and Wildlife Service and the Canadian Wildlife Service, is an invaluable aid in studying regional bird population densities and fluctuations. Information gleaned from the bluebird map (Fig. 1) when compared with the physiographic stratification map (Fig. 2) gives an insight to bird populations on a large scale never before possible. Danny Bystrak, a biologist at the Patuxent Wildlife Research Center in Laurel, Maryland, wrote an excellent article entitled, “The Breeding Bird Survey,” in Sialia 1:74-79,87, describing how these maps were made based on BBS data. Reprints are available from NABS upon request.

Comparison of the maps will show that the densities of Eastern Bluebird (Sialia sialis) populations coincide remarkably well with avian ecological stratifications (strata). Another revealing fact is that density diminishes gradually and rarely changes abruptly from high to low concentrations. Bluebird populations, like those of other birds, demonstrate “core” areas where habitat, climate, food supply, nest sites and other necessary factors are optimal. When looking at Figure 1 these areas are obvious. Density in adjacent areas tends to be high—as much from overflow from the core areas as from other factors.

In the spring, migrating males choose the best possible territory they can defend, either from other species or from competing male bluebirds. The prime requisites are the availability of food, shelter and a nesting place. Consequently, population changes will occur slowly over a long period of time because niches will be filled by males looking for a better place to live or by young males mating for the first time. Females which have

nested successfully in an area tend to return to the same area, often to the same nestbox. Absence of a mate will cause her to look elsewhere. Those pairs nesting for the first time tend to return to their birthplace, but they find the area already occupied in most cases and must look for another site.

A study of the Eastern Bluebird breeding range (Fig. 1) will reveal that this species is apparently most common along the Ohio River Valley. This area coincides with the northern limit of the winter range. During the winters of 1977 and 1978 severe weather decimated Eastern Bluebirds. Table 1 shows how bluebird abundance was reduced everywhere in the North Central states. Adverse weather, therefore, has contributed significantly to the decline of the Eastern Bluebird—and there is nothing anyone can do about the weather.

During spring and summer tens of thousands of nestboxes are erected and monitored. A great deal of time is spent trying to raise young bluebirds, only to have the effort wasted by the results of a sleet storm or sub-freezing temperatures the next winter. That is discouraging, but a second look at the table reveals that in 1979 and 1980 the bluebirds showed signs of regaining former populations. Perhaps all the work was not in vain; in fact, without human help, the picture could have been much worse. Nesting boxes used for roosts and food supplied during the extreme cold probably saved many.

Eastern Bluebirds have a remarkable capacity for regeneration if given a chance. That is what “bluebird conservation” is all about—giving them a chance. A pair of bluebirds can raise an average of four young per nesting and can nest at least two and sometimes three times during the year. It
Figure 1. Relative Breeding Density of Eastern Bluebirds in North Central States and Provinces.

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does not take a mathematician to figure out how fast they can proliferate over a period of years. Giving them a chance means not only providing a nesting place, but taking steps to protect them from predators and such pests as mites and blowflies. This is why monitoring is so important; otherwise, they could be hurt rather than helped. Wintering bluebirds can be aided by providing water and food such as berry-producing plants or suitable food at a feeder. Keeping nestboxes free from mice, squirrels, and alien sparrows can also be beneficial.

Do not be discouraged by studying the map and theorizing that it is useless to put up nesting boxes in central Ohio or Indiana or other similar places because bluebirds seem to be lacking there. Remember that the density shown on the map reflects an index. Local counts can be much higher, especially where trails have been established. Scarcity in these areas denotes a need for increased conservation measures especially because lack of nest sites is one of the main causes of these scarcities. Conversely, do not conclude that the Ohio
River Valley, for example, is such an ideal habitat that conservation measures are not necessary. Bluebirds there encounter many of the same problems that they do elsewhere in their range.

Figure 2. Physiographic Stratification of North Central U.S. and Canada as Used in Breeding Bird Survey Analyses.
Following are synopses of avian ecological stratifications in the North Central states in which relative Eastern Bluebird abundance is compared.

Illinois

Illinois lies almost entirely in the Interior Plains area of the Eastern Deciduous Forest biome. A small portion along the Mississippi River in the northwestern section of the state lies in the Northern Plains area of the Great Plains.

Northern and northwestern Illinois comprise the Great Lakes Plains (16), the Driftless Area (17) and the Dissected Till Plains (32). Eastern Bluebirds are very rare in these strata. Apparently loss of the natural grasslands greatly diminished populations. Large industrial and urban areas also tend to reduce numbers in these strata.

Two-thirds of the state is dominated by the Till Plains (31) where bluebirds are rare due primarily to intensive agriculture. Along a projection north and east of Alton, following the Illinois River, bluebirds are slightly more common. This is a good example of the influence exerted by larger concentrations in nearby areas since bluebirds are quite common in the Ozark-Ouachita Plateau (19) of Missouri which borders this west-central section of the state. The presence of the Illinois River also has an influence because agriculture is not as intense in its vicinity.

The greatest density of bluebirds may be found in the southern tip of the state which is a part of the Highland Rim (14). The extremely high density in the Highland Rim (14) and Lexington Plain (15) portions of Kentucky also help to swell the numbers.

Recovery from the winters of 1976-77 and 1977-78 appears to be slow (Table 1) but at least there is progress. With additional help from new members and increased efforts from veteran bluebirders, help is on the way.

Indiana

Indiana is situated entirely in the Interior Plains area of the Eastern Deciduous Forest biome. Approximately half of the state, the entire central portion, has a very low bluebird population; in fact, they are considered to be very rare in the entire region dominated by the Till Plains (31). The land is similar to central Illinois in most respects.

Unlike the situation in Illinois, the Great Lakes Plain (16) in northern Indiana supports a modest number of bluebirds, although they are still rare. A possible explanation would be that the area is not quite as congested as it is in Illinois. There are fewer industrial and urban areas and more farm land.

Southern Indiana is a veritable bluebird paradise. Dominant ecological influences are the Highland Rim (14) and the Lexington Plain (15). Bluegrass country appears to be a preferred habitat of the Eastern Bluebird for it is in this stratification that they are most common. Chances of attracting a pair of bluebirds to a nesting box are good and should be encouraged for it appears that the lack of a proper nest site is the only limiting factor in this part of the country. Control of House Sparrows (Passer domesticus) is, of course, a necessity.

The recovery of bluebird populations appears to be steady and rapid in Indiana with the 1981 index almost as high as the pre-freeze index.

Kentucky

Kentucky encompasses parts of two biomes: the Appalachians and Interior Plains areas of the Eastern Deciduous Forest and the Coastal Plain area of the Southeastern Forest. Eastern Bluebirds have found the ideal home in Kentucky. In no other state are they more plentiful. Even so, in the Upper Coastal Plain (4) in a small portion of western Kentucky and in the Ohio Hills (22) and Cumberland Plateau (21) of the far eastern portion of the state, bluebirds are uncommon.

Elsewhere in the state populations range from common to abundant. Nearly three-quarters of the territory comes under the influence of the Highland Rim (14) and especially the Lexington Plain (15). This is not only blue-
grass country, is it also bluebird country. In a small area south of Covington, the Eastern Bluebird is found in abundance. It is the only place in the world where this situation occurs. Apparently the song of hope for the bluebird is in a Kentucky home.

Like everything else, there are exceptions. A small section near Hopkinsville, which is in the Highland Rim (14) strata, apparently has a smaller population than surrounding areas. Perhaps someone familiar with the location could come up with an explanation.

Table 1 indicates that the recovery rate slowed somewhat in 1980, but 1981 showed a healthy increase. There is still a long way to go before bluebirds are as plentiful as they were in 1975. They have many friends in Kentucky who are anxious to help.

**Michigan**

Michigan is located almost entirely in the Interior Plains area of the Eastern Deciduous Forest biome. The southern half of lower Michigan is in the Great Lakes Plain (16) while most of the rest is classified Great Lakes Transition (20). The entire Upper Peninsula and a small portion of the Lower are in the Northern Spruce Hardwood (28) stratum of the Northern Boreal Forest. Bluebirds are very rare in the eastern half of lower Michigan and the western half of the Upper Peninsula. Elsewhere in the state they are rare except in an area around Grand Traverse Bay south to Cadillac where they are uncommon. This possibly could be a result of the abundance of orchards in this area.

A look at Table 1 will show declines in 1980 and 1981. Probably a combination of things is responsible for the reversal. Winters are extremely severe in Michigan so bluebirds are strictly migrants there. Perhaps the slow recovery is related to this fact. Not only were Michigan's bluebirds hard hit during the winter, but they must suffer the rigors of migration also.

Nesting seasons are shorter farther north. Whereas three nestings are not uncommon in the South, two clutches are generally the limit in Michigan. This also tends to slow the recovery rate. Failure to have nestboxes ready for early arrivals could further hamper the available nesting period, so make sure that by late February or early March everything is ready for the harbingers of spring. Let's hope that the bluebirds' friends in Michigan make a special effort in the next few years.

**Ohio**

Ohio, like several of the other Midwestern states, lies entirely in the Eastern Deciduous Forest biome.

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38.95 | 36.86 | 20.92 | 11.23 | 14.94 | 17.48 | 23.17

56

Sialis, Spring 1982
Three-fifths of the state, mostly to the west, comes under the influence of the Interior Plains while the east is dominated by the Appalachians.

Bluebirds are very rare in the Great Lakes Plain (16) region of northwestern Ohio and rare in the Till Plains (31) and the Allegheny Plateau (24) regions of central and northeastern portions of the state.

Fortunately the Lexington Plain (15) extends for a long distance along the Ohio River until it reaches the Ohio Hills (22). Both strata offer better than average bluebird habitat. Inland along the Ohio River bluebirds are quite common, with numbers dropping slightly in the eastern hill country.

An excellent example of the effect local conservation efforts can have on helping the bluebird is illustrated by the amazing accomplishments of volunteers at Ohio’s Holden Arboretum, the site of the Society’s Fourth Annual Meeting. Holden is located in the Great Lakes Plain (16) where the sighting of a bluebird is a very rare occurrence; however, at the arboretum they can be seen everywhere. Imagine how wonderful it would be if this were true throughout the state.

Survey reports shown in Table 1 indicate that recovery is progressing slowly in Ohio, with a minor setback in 1981. There is still a long way to go, but with the enthusiasm demonstrated by Ohio members during the past year, previous records should be exceeded.

**Ontario**

Ontario is located almost entirely in the Northern Boreal Forest biome. Only the area adjacent to the Great Lakes lies within the Eastern Deciduous Forest.

Eastern Bluebirds are extremely rare to non-existent in the Northern Spruce Hardwoods (28) and the Closed Boreal Forest (29) of this Canadian province. They are also very rare in the Great Lakes Plain (16). The same is true of the St. Lawrence River Plain (18) except in the Kawartha Lakes area from Belleville west to Victoria Harbour and in a small area near Ottawa, where bluebirds are rare.

In Ontario no bluebirds were reported on BBS routes in 1978 (Table 1). A slight gain was noted in 1979 but in 1980 populations did not increase. Ontario is located at the northern limit of the breeding range; consequently, decreases in numbers of wintering migrants to the south will adversely affect the number of birds returning to the province. The year 1981 showed an improvement almost to the 1975 level.

Discouraging as things may seem at the present time, there is always hope as long as bluebird conservationists have nesting boxes available early in the spring when they are needed most. Actual nest building doesn’t start until the middle of April or even early May, but the boxes are needed to provide a roosting place during cold weather. Natural cavities are becoming more scarce each year as the demand for firewood increases.

**Tennessee**

Tennessee, like Kentucky, has a mixed avian physiographic stratification. The western quarter of the state is in the Coastal Plain area of the Southeastern Forest biome, while the rest of the state is divided almost equally between the Interior Plains and the Appalachians of the Eastern Deciduous Forest biome.

Bluebirds are rare in the Upper Coastal Plain (4) of the west and the Blue Ridge Mountains (23) and Ridge and Valley (13) of the east. They are also rare in the western portion of the Mississippi Alluvial Plain (5) but uncommon in the eastern portion. Populations are also uncommon in the Cumberland Plateau (21) where the open fields of the rolling hills provide a more suitable habitat than that found in the ridges, valleys and mountains to the east.

Largest concentrations are found in the central portion of the state where the Highland Rim (14) influence offers an abundance of habitat that attracts so many bluebirds they are considered to be common. Successful nestings should be a probability not only here but throughout the state. For example, Chattanooga is situated
in the Ridge and Valley (13) section where bluebirds are rare. Conservationists at the Chattanooga Nature Center decided to do something about that situation, so they installed 35 nesting boxes at the Center. Last year 30 of the 35 boxes were occupied by nesting pairs of bluebirds that raised young successfully.

Usually winters are not as severe in Tennessee as they are farther north. This accounts for the more rapid recovery rate shown in Table 1. Expanding existing trails or starting new ones will help to accelerate the return of the species to former densities.

West Virginia

West Virginia is aptly named the Mountain State. Situated entirely in the Appalachians, it is a part of the Eastern Deciduous Forest biome.

On the north, a finger of the Allegheny Plateau (24) juts down to the center of the state. In this heavily wooded, mountainous area bluebirds are rare. Elsewhere in the state however, populations range higher. They are uncommon both in the Ridge and Valley (13) section in the east and the Cumberland Plateau (21) in the south. The Ohio Hills (22) strata covers most of the western portion of the state. It is here that the Eastern Bluebird is a common nesting species.

Friends of the bluebird in West Virginia have given all lovers of this beautiful native cavity nesting bird an outstanding example of the results that can be obtained by dedicated hard work. Not only has the population increased, but it has exceeded the 1975 figure and almost equalled the high reached in 1976 (Table 1). The key to success has been the large number of nesting boxes that have been monitored on a regular basis. Many miles have been covered along country roads in order to insure a successful nesting season, but it has been well worth the effort. Perhaps the beauty of the natural scenery inspires the desire to help protect one of nature’s most attractive creatures.

Wisconsin

Wisconsin spans two biomes: the Interior Plains of the Eastern Deciduous Forest and the Northern Boreal Forest. Northern counties of the state are a part of the Northern Spruce-Hardwoods (28) where bluebirds are rare to very rare. They are also rare in the southeastern part of the state which is influenced by the Great Lakes Plain (18) stratification, as well as much urbanization.

Bluebirds are rare in the southwestern Driftless Area (17). Central Wisconsin is predominantly in the Great Lakes Transition (20) where bluebirds are also rare, except for a small pocket west of Ojibwa and Ladysmith where they are more common.

Regeneration of bluebird populations seems to be progressing at a much faster pace in the Badger State than in the rest of the northernmost states of the Midwest (Table 1). For example, in both 1980 and 1981 the numbers almost doubled those of the preceding year. This is an encouraging sign that conservation efforts in the state are helping; however, much more aid is needed in the central section. There is no reason the Kettle Moraine country cannot support larger populations. It is located largely in the Great Lakes Transition (20) area, which offers better than average bluebird habitat. Much of the land is in pasture, which bluebirds like, but unfortunately, the need for nesting sites far exceeds the supply. Nestboxes mounted near open fields should attract nesting pairs. As long as boxes are monitored on a regular basis (once a week) there is hope for success.

The data available from the Breeding Bird Survey offer a unique opportunity to study aspects of North American bird populations not possible anywhere else. Although we could all see that Eastern Bluebirds had suffered during the winters of 1976-77 and 1977-78, and that they have subsequently made a steady recovery, it is nice to have a scientific and statistically acceptable index to support our observations. Also, many
people are not so fortunate as to be intimately involved with the beautiful bluebird. These people would find it necessary to turn to the BBS for data on population trends or distribution. The more we know about our birds, the better we can do something to help preserve them in an environment so altered by man that many species find life difficult. It is hoped that in future issues of Sialia, we can continue to follow the trends and examine the distribution of bluebirds as well as other cavity nesting species. Remember that data from the BBS are available to any serious researcher.

Much of the work leading up to this article was done by Danny Bystrak. I would like to acknowledge his help and extend thanks to him.

Editor's Note: This article demonstrates how very important it is to avoid establishing a bluebird trail along an established BBS route. By knowing where boxes are located a BBS observer could artificially inflate the numbers counted and give an untrue picture of bluebird population density in an area.

6002 Hunt Club Road
Elkridge, MD 21227

Using Golf Carts to Thwart Predators

Last year was our first attempt at building bluebird nesting boxes and starting a bluebird trail. We are very happy with our success.

We live at Woodson Bend Resort, a 400 unit condominium complex on a 355 acre peninsula almost completely surrounded by the South Fork of the Cumberland River and Lake Cumberland in south-central Kentucky. Most of the nesting boxes were placed around our nine hole golf course while others were put near condos belonging to our bird watching friends.

After reading several articles warning that a predator, most likely a raccoon, would follow a human scent trail, we came up with a good solution for that problem. All of our nesting boxes were placed so that we could drive up to them in our golf cart, stand up and check the box without ever stepping onto the ground.

Of the 30 nesting boxes we put up last spring 12 contained a total of 19 bluebird nests during the 1981 season.

| Eggs laid | 71 |
| Eggs hatched | 62 |
| Eggs lost | 9 |
| (abandoned or infertile) |
| Young fledged | 60 |
| Nestlings found dead | 2 |
| (unknown causes) |

In addition to the bluebirds that were fledged, two boxes fledged a total of 14 Carolina Chickadees and one box contained a Tufted Titmouse nest from which seven fledged.

We have enjoyed the trail all summer long. Many people here have become interested and have asked how they can help us expand the trail either by building nesting boxes or by donating money for lumber to construct winter roosting boxes. After just one successful breeding season we see bluebirds almost every day on our walks around the property.

Mablea Allman
CR Box #1
Woodson Bend Resort
Bronston, KY 42518
Successful Transplantation of Orphaned Bluebird Nestlings

Merilyn C. Hiller and Jim Boozer

In the process of maintaining a bluebird trail, bluebirders may be faced, from time to time, with the problem of orphaned nestlings. Although our instincts often prompt us to "adopt" these unfortunates and attempt to raise them ourselves, lack of time, energy, and know-how usually leads to death of the nestlings. When we were faced with this problem we were reluctant to attempt raising nestlings ourselves. Through a fortunate set of circumstances we were able to provide a much better alternative. Four eight-day old nestlings which had lost both of their parents were substituted in an active nest for four apparently infertile eggs.

Orphans

Life began for these Eastern Bluebirds (*Sialis sialis*) in a nesting box that was part of a bluebird trail established and maintained by Jim Boozer on Rich Mountain, a rural area four miles southeast of Brevard, N.C. By 25 July the last egg of a clutch of five had been laid. This was the third clutch of five eggs at this location during the 1981 breeding season. Hatching of four of the eggs took place uneventfully on the sixth and seventh of August. One egg failed to hatch. Both parents were noted feeding the hatchlings while the box was being monitored at regular intervals, usually every day. On 12 August five days after hatching, it was noted that the male was not appearing at the box. Steady observation over eight hours revealed that the male had indeed disappeared and that a Red-shouldered Hawk (*Buteo lineatus*) was in the vicinity. The female continued to feed the nestlings until the eighth day when she, too, disappeared. Between the time of the male's disappearance and the female's disappearance, we had provided the nestlings with supplemental feedings of grasshoppers and crickets. On 15 August, the day the female disappeared, eight hours passed without parental feeding. It became apparent that the nestling bluebirds had been orphaned.

Foster Home

On 7 June, two eggs were noted in a new nest built in a nesting box that was part of a bluebird trail established and maintained at the edge of a golf course at Sherwood Forest, nine miles southeast of Brevard, N.C. The box had been occupied earlier in the spring and had produced two young and three infertile eggs. Sometime between 21 May, when the two young were banded (U.S. Fish and Wildlife Service aluminum leg bands and colored plastic leg bands were attached to facilitate recognizing the birds again), and 30 May, the young birds fledged. The nest was removed, the box dusted with 1% rotenone and by 7 June, a new nest had been built and two eggs laid. The female brooded these eggs throughout June and into early July and the contents of the nest could not be seen until 16 July, when five eggs were noted. No male bluebird was noted in the vicinity of this nest throughout this period.

Transplantation

On 15 August, when the critical situation developed with the orphaned bluebirds at Rich Mountain, it was decided to substitute the orphans for the apparently infertile eggs that had been brooded since 7 June. The orphans were transported to Sherwood Forest in their own nest, it having been constructed in a cut-down peat pot insert used in the nesting boxes at Rich.
Mountain (Fig. 1). When the female at the Sherwood Forest nest left, the entire nest together with four eggs (an egg was found on the ground nearby much later and may have been the fifth egg) was removed, and the peat pot containing the orphans was inserted into the box. Although this box was not of the same design as the Rich Mountain boxes, it did open in the front thereby permitting easy insertion of the entire peat pot containing nest and young.

Adoption

From a nearby observation post, we watched as the female returned to the newly filled box. She entered the box and almost immediately reappeared in the opening and then flew to the top of the box. After a moment, she reentered the box, apparently for another look, and, after a few moments, came back out to sit on top of the box again. She repeated this once more and then flew off to return within a few minutes with food and began feeding the nestlings and subsequently carrying away fecal sacs. Within fifteen minutes a male bluebird appeared and after one look inside the box, he, too, began feeding the transplanted young. It is interesting to note that the food brought by both adoptive parents was quite small in size as one would expect for newly hatched young. Since these young bluebirds were already eight days old, we decided to help these adults and supplemented the young bluebirds’ diet with crickets. The first two days supplementation was done three times a day—two crickets to each of the young birds. By day three of the transplantation, the adults were bringing larger food items so that supplementation was decreased to once a day and discontinued entirely by day seven of the transplantation.

Sequel

On 19 August, at twelve days of age, the young were banded with U.S. Fish and Wildlife Service bands and were also marked with a combination of three plastic colored leg bands for future visual identification. On 26 August, at nineteen days of age, the young fledged. They remained in the vicinity being fed by the adults for several weeks. Individual young have been seen from time to time in the subsequent period of time although they are no longer in a tight family group. On occasion, several of this special brood have been seen sitting together on the wires along the road with a few unbanded bluebirds.

Conclusion

Transplantation of orphaned young bluebirds to a nest containing infertile eggs was a feasible alternative to raising the young by hand. Factors that facilitated this procedure were 1) regular monitoring so that condition and age of the young were known and so that it could be determined that the adoptive nest did indeed contain infertile eggs and 2) design of the nesting box (front opening) and the use of a peat pot insert to hold the nest which eliminated the need for handling the nestlings during transfer.

Rt. 1, Sherwood Forest, Brevard, NC 28712 (Hiller); 39 Curves, Rich Mountain Road, Brevard, NC 28712 (Boozer).
Please tell me how to get rid of starlings.

Herman Brown
Charlotte, NC

This is a difficult question to answer; however, starlings are not protected by law.

We have been told that we live too far north (28 miles northwest of Boston) to attract bluebirds. Is this true?

Alice Felton
Boxborough, Massachusetts

No. The breeding range of the Eastern Bluebird extends north well into Canada.

Can bluebird boxes be mounted on telephone poles? If so, do I need to obtain permission first?

Lavina Hart
Baltimore, Maryland

Telephone and other utility poles are excellent places to mount bluebird nesting boxes, but permission should be secured from the utility company. This is often difficult to obtain. In the hotter parts of the country, overheating of nesting boxes is sometimes a problem. This can be avoided when utility poles are used by mounting the boxes on the northeast side of the poles.

How do I distinguish House Sparrow eggs from those of bluebirds?

Mrs. R.T. Jones
Canton, Illinois

Bluebird eggs are usually clear blue, but occasionally are white or slightly pinkish. House Sparrow eggs have a white or off-white or even slightly bluish background and are more or less heavily marked with olive-brown.

This is the second year that our bluebird babies died in the nest early in the season. Can you suggest any way that we can help them survive cold wet spring weather?

Dolly Hagan
Spokane, Washington

Bluebird nestling mortality is often quite high during prolonged periods of unseasonably cold wet weather. There seems to be no practical way of preventing this. These losses are not as serious as they might seem since the birds will almost always renest quite promptly as soon as the weather improves. When entire broods are found dead in the nest, the nest and all contents should be removed promptly from the box.
Bluebirds in Chinook Country

Duncan J. Mackintosh

This paper was presented at the Great Northern Plains Regional Meeting of the North American Bluebird Society at Brandon, Manitoba, 27 June, 1961.

Alberta has only one species of bluebird, the Mountain (Sialia currucoides). In the past southern Alberta was well populated by that species, but by the early 1970's bluebirds had become very scarce. In 1974 the Lethbridge Naturalists began a project to encourage the return of bluebirds. Initially, I was one of two people who built 40 nestboxes which were put up in the immediate Lethbridge district. I kept records which, by 1979, were anything but encouraging: the number of occupied houses ranged from one to five in as many years.

In 1979 two other bluebirders and I started Mountain Bluebird Trail (M.B.T.). In 1980 we came under the auspices of the Federation of Alberta Naturalists. During the winter of 1979-80 we pre-cut 3/8 and 5/16 inch fir plywood and packaged all parts for 12 houses in boxes which we called "kits." Eight interested people assembled 385 nesting boxes for us. Our design has a 5 x 5 inch interior floor space and is top-opening for inspection and cleaning. The roof has a 5 x 5 inch insert pinned with nails on either side. Earlier models in which roofs were secured with wire were found not suitable for Chinook Country where high winds are common. Ventilation holes at the top on each side, drain holes on the floor, and a 1½ inch entrance hole completed the specifications. M.B.T. in large letters was marked on each side of the nestboxes. When placed they were numbered as a deterrent to theft and vandalism. Painting was unnecessary because fir plywood weathers readily, blending with the usual cedar fence posts.

The open prairie landscape around Lethbridge leaves us with very limited attractive habitat for bluebirds. Areas along the Old Man and St. Marys Rivers and near a few coulees is all we have in the way of good habitat. These valleys usually contain trees along with native grasses which are grazed by cattle and horses. With the cooperation of farmers and property owners along the river valleys, we were able to place a continuous trail of nestboxes for over 40 miles. Houses were always placed on fence posts and spaced one-quarter to one-half mile apart.

Prior to the placement of nesting boxes bluebirds largely used cavities in the clay cliffs. One such nest site was examined in 1978. The entrance hole was 6 inches in diameter and 20 inches deep. Despite the successful fledging of young from that cavity, we have found that such places are insecure nest sites. During heavy rains the clay cliffs erode washing out nests or sealing them over. Each year there is a noticeable increase in box occupancy after heavy rains. We also found bluebird pairs using old machinery and irrigation pipes for nesting sites.

Sixty-five miles west and southwest of Lethbridge there are foot hills which are well treed with open meadows—ideal bluebird terrain. When we placed over 100 boxes in that area they were readily occupied. We hope to build up large populations in the good areas so that perhaps the juvenile bluebird population will overflow eventually down the river valleys into less desirable habitat.

In 1980 I received a banding permit from Cam Finlay, Edmonton, who has a Master Permit and also is coordinator of all bluebird trails in Alberta. This was the first time any bluebird banding had been done in southern Alberta. Fifty-two houses were occupied by bluebirds. The results that year were 263 eggs laid, 247 bluebirds fledged, and 171 banded.

According to our seven year
records, male bluebirds arrive in Chinook Country between 17 and 22 March; females follow about a week later. Clutches are generally complete by 24 May. In 1980 there were four second broods and several boxes contained clutches of seven eggs.

Tree Swallows (Iridoprocne bicolor) are attracted to bluebird boxes and quite often take them over from bluebirds which have already started nesting. Tree Swallow eggs are not counted nor the young banded, but we do know the exact number of nest-boxes used by the swallows which enables us to estimate the number fledged for our records. The long distances we must travel to monitor boxes forces us also to estimate the number of wrens fledging from nest-boxes. We find few sterile swallow or wren eggs and almost all nestlings seem to fledge successfully.

Nineteen eighty-one was a difficult year for Mountain Bluebirds in southern Alberta although many more pairs used nesting boxes than in 1980. In 73 boxes 323 eggs were laid, but only 52 boxes contained successful nests. We banded 164 of the 224 young which fledged. There were six second broods. The most productive pair fledged seven in the first brood and six in the second. The only noticeable reason for the large number of sterile eggs (99) was the cold wet weather during the last part of May and the first two weeks of June.

For 1982 we hope to place 100 houses on our trail. All boxes will be constructed from 3/4 inch plywood with an interior floor space of 2 1/2 square inches and a slightly oversized entrance hole of 1 3/16 inches. Our previous box design has been successful so that possibly we can encourage larger broods (more seven egg clutches) with a larger floor space. We fully expect house occupancy to increase. With more favorable weather in May and June there should be an increase in Mountain Bluebirds throughout southern Alberta.

1919 9th Avenue, South
Lethbridge, Alberta
Canada T1J 1W8
Livestock Guards Make Bossie, Black Beauty, and Bluebirds Compatible

Richard M. Tuttle

This paper was presented at the Fourth Annual Meeting of the North American Bluebird Society on 17 October, 1981, at Holden Arboretum in Ohio.

Pastures are good habitats for Eastern Bluebirds (Sialia sialis). Grazing animals keep the grasses well manicured which facilitates hunting by bluebirds. The bluebird’s diet of grassland insects is enhanced with scarab beetles that recycle livestock manures. Fences surrounding pastures are excellent hunting perches for bluebirds, and shade trees in the pastures greatly increase the efficiency of food gathering.

Most pastures in Ohio are composed of areas considered too wet, too steep, or too rocky for cultivation. Pastures frequently border streams and many incorporate woodlots or scattered trees and shrubs, a habitat favoring House Wrens (Troglodytes aedon), one of the bluebird’s major competitors. To minimize competition from House Wrens, bluebird trail managers need complete freedom when selecting practical nesting box sites. Boxes placed more than 30 yards from the nearest shrub or tree stand the best chance of remaining wren-free.

Many veteran bluebirders will testify that sheep pastures, as compared to horse and cattle pastures, are the easiest to manage for bluebirds. Sheep seem to ignore pipe-mounted nesting boxes. Automobile chassis grease added to the pipe mounts to deter raccoons and other climbing predators poses the only problem: Wool and grease should never mix. This possible conflict is avoided by smearing the pole grease more than three feet above the ground.

Cattle and horses, on the other hand, seem to view a pipe-mounted nesting box as a convenient scratching post. Cattle and horse farmers accurately predict that the nesting boxes will be broken during head and neck scratching sessions, and the mounts bent as bulky bodies rub against them. The result is that bluebirds are discouraged or displaced. For these reasons, most trail managers discount many cattle and horse pastures as environments for effective bluebird management.

Experimental Livestock Guards

I was determined to invent a practical device that would protect a nesting box and its mount from horses and cattle. My first “livestock guard” prototype was a reinforced square wooden cross that supported a 24 inch ring of barbed wire attached to the four cross ends. A U-bolt held the guard four feet above the ground—low enough to deter livestock but high enough to discourage most jumping predators such as house cats.

I made six livestock guards and installed three of them on pipe mounts in a horse pasture that I monitored weekly. Fellow bluebirders Bob Orthwein, Jim Helzer, Don and Diana Plant, and I installed the other three guards on angle iron mounts in a dairy cattle pasture in Malabar Farm State Park in Ashland County, Ohio.

While installing the experimental cattle deterrents, we had doubts that the guards would hold up. Farmers have watched cattle scratch themselves on barbed wire anchored to a fence post or gate. In such cases, the animal is in complete control of the
scratching process since the barbed wire is held in a stationary position.

A cattle guard, however, moves when an animal pushes against it. In fact, any horizontal movement of the guard causes the pipe or angle iron mount to twist or bend, and potential energy is stored in the mount. When the scratching animal releases its pressure on the barbed wire, the stored energy is released so that the barbed wire snaps back and snaps the animal. The animal cannot control the scratching act; the guard "bites" as it is rubbed.

I had some doubts concerning the strength of the wooden guards, so I made four additional guards using two pieces of 1/8 x 1 x 1 inch angle iron for each cross support. The steel guards were definitely stronger, but other bluebirders continued to express doubts. The steel guards were installed in late spring in a beef cattle pasture. At the end of the nesting season there were only traces of hair in a few barbs of both types of guards—evidence of attempted scratchings. The "untouched" appearance of the nesting boxes, the mounts, and their guards was proof that the barbed wire prevented cattle and horses from destroying boxes. *Livestock guards do work!*

**Livestock guards open up new nesting territories for bluebirds.** Seven bluebirds and no wrens were produced from two boxes protected by guards in the dairy cattle pasture. One box in the beef cattle pasture produced four bluebirds and no wrens.

The horse pasture contained the best example of the true worth of livestock guards. Three nesting boxes that produced 18 House Wrens during the 1980 season were moved from brushy fence rows into the brush-free horse pasture. These boxes, protected from horses by guards, produced 14 bluebirds (three broods from two pairs) and one family of five Tree Swallows (*Iridoprocne bicolor*). House Wrens didn't even try to nest during the 1981 season due, I believe, to the distance (35 yards) between the brushy fence rows and the nesting boxes.

![Photograph by Robert O'Neil](image)

This angle iron livestock guard is designed to protect a nesting box and mount from beef cattle. By using this guard a box can be placed anywhere in a pasture—far from wren-infested fence rows. Four bluebirds fledged from this box.

**Trouble in the Horse Pasture**

The 1981 success in the horse pasture was not without problems. As I checked one box on 6 May, I noticed three deep grooves nearly 5 inches wide running parallel with a smaller crease in the grass. The sod had been peeled back, producing grooves 1 inch deep. Apparently the horses had been moved recently to the new pasture and were enjoying a spring frolic. One of the three horses had been galloping at a high rate of speed before seeing the guard at the last moment. The panicking animal had "locked all four" and had slid past the unforeseen obstruction completely unscathed. I thought that there would be no further trouble since the animals now knew where the guards were located. How wrong I was!

As I entered the horse pasture on 27 June, 1981, I noticed that one of the three boxes was completely knocked down. I suspected vandalism until I noticed something familiar: The sod near the box was torn, bearing three wide grooves and a smaller crease.
This time there had been a collision, and a big one at that! A horse had managed to lose its footing completely during its last second of panic. Apparently, its body was already sliding on the ground as its chest crashed into the lower half of the pipe. The impact caused the pipe to buckle, bending the box and livestock guard over the side of the beast. The box was immediately whipped in the opposite direction and the pipe was bent over completely at ground level as momentum carried the careening horse onto it. When the horse stood up, the pipe sprang to a 20-degree angle above the slippery sod.

 Luckily, two events did NOT happen. First, the horse was not injured except for a vertical grease mark behind its left front shoulder. I was relieved; I can’t afford to pay for a dead horse. Second, five young Tree Swallows in the box at the time of the collision were also uninjured. They fledged three or four days after the collision, judging by the droppings that were cemented to the box side rather than the nest. The only real losers were the predators; they missed an easy meal.

 I later learned from a horse “expert” that horses frequently run into objects that show no movement. So I tied two eight inch strips of pink surveyor’s ribbon to the barbed wire of each guard, added a yellow plastic can lid to the lower end of each ribbon to weight it down, and added bolts to each lid to prevent further wind-blown entanglement. So far, the rotating ribbons and twisting can lids have successfully alerted the horses to the presence of the nesting boxes.

 It should be added that scar-producing barbed wire is usually not used in pastures containing show horses. In such cases, a more expensive wooden corral can be built around each nesting box. In any case, liability should be explored before installing livestock guards on another person’s property.

**Grease-licking Cattle a Problem**

Cattle create a unique problem: They lick the grease from the mounting poles. Within one week after the nesting boxes were erected, both types of cattle had cleaned the nesting box mounts of grease, thus making the boxes accessible to climbing predators. Alum (aluminum ammonium sulfate), which has made many cartoon characters pucker up, was the first logical choice to add to pole grease as a licking deterrent.

Before I put my theory into practice, I called the Ohio State University Extension Service and talked to cattle experts. I learned that there is no commercial deterrent to cattle licking, that alum in small amounts should not hurt cattle, and that alum should not be used around dairy cattle in order to avoid tainting the milk.

I blended one-half cup of alum with one pound of grease. Bob Orthwein and Jim Heizer smeared this concoction on four mounting poles in a

Jim Heizer of Perryville, Ohio, applies camphorated grease to an angle iron mount. Camphorated grease is ignored by cattle that normally lick greased poles clean. Horses do not lick grease.
Figure 1. Steel Livestock Guard.

1. Prepare two pieces of 1/8" x 1" x 1" angle iron 24" long. Weld or bolt the two pieces together to make a cross. Drill a 1/4" hole in the end of each cross member to hold a wire clamp. (Fig. 2).

2. Normally the guard will be attached to a pipe mount by a U-bolt of the proper size. Drill two holes in the cross and install the U-bolt.

3. Construct the wire clamps from 1/4" x 1" bolts, 3/8" washers and 5/16" washers. For three of the wire clamps, put a lip on the 3/8" washers. Assemble the wire clamps as shown in Fig. 2 in the 1/4" holes in the ends of the cross members. The fourth wire clamp uses the same materials and holds the overlapped barbed wire. Put two lips (on opposite sides) of the 3/8" washer and assemble as shown in Fig. 2 in the remaining hole in the cross member.

4. Use at least 85" of 12½ gauge barbed wire with five inch spacing. Each quarter circle of the guard has 20" of wire (with four barbs). Clamp the barbed wire in each of the wire clamps so that the barbed wire forms a circle.

5. Overlap the ends of the barbed wire in the fourth wire clamp so that one wire is on each side of the bolt and twist the ends around the wire.

Paint each guard with a color that contrasts with the foliage in order to deter collisions.

Figure 3. Wooden Livestock Guard.

1. For the center support, prepare a piece of 3/4" x 8" x 8" outdoor plywood with one quarter of it cut out as shown. Glue and nail one piece of 1" x 2" x 24" and two pieces of 1" x 2" x 1½ 5/8" white pine to the center support to make a cross. (Glue the 1" side to the center support.) Drill a hole in the end of each cross member for the attachment wire (used in step 3).

2. Normally, the guard will be attached to a pipe mount by a U-bolt of the proper size. Drill two holes in a cross member and install the U-bolt.

3. Use at least 85" of 12½ gauge barbed wire with five inch spacing. The ends of the barbed wire will be overlapped and joined to form a circle. Each quarter circle of the guard has 20" of wire (with four barbs). Insert a 6" piece of 14 gauge wire in the hole in the end of each cross member and wrap each end of the wire for two revolutions around the barbed wire to produce a snug fit. Each end of the wire is bent to produce an additional barb.
beef cattle pasture. By the following week all the pipes were licked completely clean by the persistent bovines, thus proving that alum is useless as a deterrent to grease licking.

Several weeks later, I overheard a conversation between two horsemen in a local restaurant. They were discussing the use of liniments on horses. My thoughts immediately turned to cattle. Liniments must contain some licking deterrents or they would be ineffective. I immediately drove to the local grain elevator and read the ingredients in the liniments. Two brands had two chemicals in common: camphor and turpentine.

I bought turpentine from the hardware store and then went to a pharmacy and found one-ounce wafers of camphor at 44¢ each. The pharmacist assured me that neither turpentine nor camphor would hurt livestock if they did lick it; both had once been included in some internal folk medicines. The additives in automobile grease probably posed a greater threat to a cow's health.

I placed one-half pound of grease in each of three containers. I added four ounces of turpentine to the first container and one ounce of camphor dissolved in four ounces of turpentine to the second container. Camphor will not dissolve in water and it cannot be melted easily. It does dissolve in turpentine if you crush the wafers with a spoon. One ounce of camphor was dissolved in a minimum amount of turpentine (less than one ounce) and added to the third container.

Bob and Jim returned to the beef cattle pasture and added the three mixtures to three different mounting poles. One week later, the pole with the turpentine-grease mixture was licked clean. Tongue prints proved that poles with turpentine-camphor-grease and camphor-grease mixtures were tasted but rejected by the cattle. Since the pole with the turpentine-grease mixture was the only one to be licked completely clean, camphor appears to be a highly probable deterrent to licking. Bluebirds can continue to be adequately protected, even in cattle pastures. Bossie and bluebirds are compatible.

In conclusion, livestock guards represent a concept in its fledgling stage. More experimentation and development need to be done. Possibly, other materials and other ideas can work just as well or better than those herein described. Can smaller guards work as well? How safe are livestock guards? Can they be made constantly visible to galloping horses? Does camphor deter licking all season or are new applications needed? Would camphorated grease be effective as a snake repellent?

Bossie and Black Beauty, your pastures are going to be busier places: the bluebirds are coming—whether you scratch and lick or not!

295 W. Central Avenue
Delaware, OH 43015
A total of 122 persons responded to the 1981 Bluebird Nest Box Report form sent out by NABS during the 1981 nesting season. This number is only 42% as large as the number of persons responding in 1980 (see Sialia 3:52-53). A number of possible reasons may be cited for this large decrease in response, including increased postage rates and differences in the timeliness and manner of mailing (last year’s forms were sent out in a separate mailing; this year’s were not). Nevertheless, the number of persons who did respond permitted many instructive generalizations.

As was the case last year, more respondents reported from Maryland (23; 19%) than any other state or province. Although geographic regions were unchanged from last year, distribution of the response was altered somewhat. This year 48% of the responses came from the East, 42% from the Midwest, and 10% from the West; corresponding figures for 1980 were 56%, 32%, and 12% respectively. Hence, the biggest change was an increase in the Midwest at the expense of the East.

Observers reported that bluebirds used 1,932 boxes, with the percentage of boxes available that were used highest in the Midwest and lowest in the East (Table 1). Data supplied on numbers of eggs laid or hatched, or numbers of birds fledged, were often incomplete so that the Midwest totals actually show fewer eggs laid in that region than elsewhere. The percentage of eggs laid that resulted in young fledged is an instructive index of nesting success, and by this index the West was most successful and the East was least successful (Table 1).

All reports from the East and Midwest involved Eastern Bluebirds. All three bluebird species were represented in the West, however. Reporters from the West submitted 4 summaries on Eastern Bluebirds (from Texas [2], Nebraska and Kansas), 5 summaries on Mountain Bluebirds (from North Dakota, Washington, and Alberta [3]), and 2 summaries on Western Bluebirds (1 covering both Oregon and California and another covering both Washington and Idaho). Only one reporter submitted data on more than a single species, and that report involved both Western and Mountain Bluebirds nesting near Englewood, Elbert County, Colorado.

Despite the paucity of information on Western Bluebirds, perhaps the most interesting report involved an albino of this species from a trail of 167 boxes in Benton County, Oregon. Twenty-three of 34 (68%) boxes along this trail successfully fledged young. Violet-green Swallows were the most important competitors, using 31 boxes, followed by Tree Swallows (17), wrens (8; mostly House Wrens), and chickadees (5; mostly Black-capped Chickadees).

Western observers reporting on Mountain Bluebirds indicated that Tree Swallows were the most important competitors, using 503 (84%) of 601 boxes used by species other than bluebirds. Other avian competitors of the Mountain Bluebird, in order of decreasing importance, were the House Sparrow, House Wren, European Starling, and Black-capped Chickadee. Of an estimated 5,431 Mountain Bluebird eggs laid throughout the West, 4,897 (90%) hatched and 4,747 (87%) fledged young. Thus all indications are that Mountain Bluebirds continue to be fairly numerous and are nesting at a fairly high rate of success throughout much of the West. By contrast, the Western Bluebird is relatively scarce and appears to be nesting at a lower rate of success.

In the East, Tree Swallows used 193 (33%) of 587 boxes used by species other than bluebirds. House Sparrows were nearly as numerous
Table 1. Bluebird Nest Box Data According to Geographic Region.

<table>
<thead>
<tr>
<th></th>
<th>East</th>
<th>Midwest</th>
<th>West</th>
<th>Total</th>
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<tbody>
<tr>
<td>Number of Respondents</td>
<td>59</td>
<td>51</td>
<td>12</td>
<td>122</td>
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<tr>
<td>Number of Boxes Available</td>
<td>1,453</td>
<td>1,195</td>
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</tr>
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<td>Number of Boxes/Respondent</td>
<td>24.6</td>
<td>23.4</td>
<td>170.4</td>
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<tr>
<td>Number of Boxes Used By Bluebirds</td>
<td>477</td>
<td>705</td>
<td>750</td>
<td>1,932</td>
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<td>Percentage of Available Boxes Used</td>
<td>32</td>
<td>59</td>
<td>37</td>
<td>41</td>
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<tr>
<td>Number of Eggs Laid</td>
<td>4,045</td>
<td>3,147</td>
<td>5,882</td>
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<td>Percentage of Eggs Hatching</td>
<td>77</td>
<td>81</td>
<td>88</td>
<td>83</td>
</tr>
<tr>
<td>Number of Young Fledged</td>
<td>2,770</td>
<td>2,343</td>
<td>4,967</td>
<td>10,080</td>
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<tr>
<td>Percentage of Eggs Resulting in Fledged Young</td>
<td>68</td>
<td>74</td>
<td>84</td>
<td>77</td>
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</table>

(32%), followed by House Wrens (19%) and chickadees (14%). Interestingly, an almost identical pattern emerged when usage frequencies were tabulated for 480 boxes used by species other than bluebirds in the Midwest. There, Tree Swallows used 143 boxes (30%), followed by House Sparrows (29%), House Wrens (19%), and chickadees (7%). Other avian species using boxes in the East and Midwest were the Tufted Titmouse, White-breasted Nuthatch, Great Crested Flycatcher, and the Red-headed and Red-bellied Woodpeckers.

Snakes were reported as the most frequent cause of loss of eggs (147 cases) or young (123) in all regions combined. Weather was also blamed for the frequent loss of eggs (114) or young (114), followed by raccoons (157 and 57), House Sparrows (127 and 31), House Wrens (118 and 13), and vandalism (36 and 18).

When the 6 major causes of losses are compared by geographic region, weather emerges as a greater cause of loss of eggs or young in the West (30%) than in the Midwest (22%) or East (14%), whereas losses to snakes display the opposite pattern (5, 27, and 29%, respectively). Surprisingly, House Sparrows were credited with a greater proportion of the losses in the West (33%) than in the Midwest (18%) or East (14%). House Wrens were also more important in the West (27%) than in the Midwest (10%) or East (13%). Raccoons were only considered a problem in the East and Midwest (22% in each region), and vandalism was relatively infrequent in the Midwest (2%) compared with the East (8%). No losses were attributed to vandalism in the West.

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

APPENDIX

Geographic Regions According to States and Provinces

1. West:

2. Midwest:

3. East:
North American Nest Record Cards
To Be Used in 1982

The North American Bluebird Society designed its own nest record card in the spring of 1979. Since that time, many versions and revisions have been recommended. The purpose of the cards is to supply information about our cavity nesting species on a continent-wide basis. Investigators can use this information to help determine trends and factors which influence reproductive success. This program has the potential to generate tremendous volumes of valuable data. For example, if each Society member filled out just one card, more than three thousand nest records would be obtained in a single season. These would come from every state and province in North America. Some of our members maintain hundreds, even thousands of nesting boxes. Thus, computerization of the cards is essential for the full potential of the data to be realized.

Beginning with the 1982 season, the Society will enter into a cooperative effort with the Cornell Laboratory of Ornithology in their long-standing North American nest record card program. There are several advantages to working with Cornell rather than attempting to maintain our own program. Cornell’s program has been in existence for fifteen years—they know all the in’s and out’s of nest record cards. They have the equipment and ability to computerize the data, which is one of our major concerns. Many of our members already use the Cornell cards, so the entire procedure will now be standardized in one basic format.

People occasionally express a concern about the Cornell cards being complicated and difficult to understand. Your cards will go to a regional coordinator before they are forwarded to Cornell. That person will assist you with any problems you may encounter. Regional coordinators will be selected soon and listed in the summer issue of *Sialia*. Anyone wishing to volunteer as a regional coordinator should contact the NABS research committee chairman.

The most important task facing you as a Society member is to begin collecting pertinent data today. An example of the nest record card appears on the opposite page. Record careful notes on all of the cavity nesting species using your boxes, not just bluebirds.

Nest record cards and complete instructions for using them may be obtained free of charge. Please specify the number of cards needed (one card per nesting). Write to either:

Robert M. Schutsky
NABS Research Committee Chairman
Muddy Run Ecological Laboratory
P.O. Box 10
Drumore, PA 17518

or

Nest Record Card Program
Cornell Laboratory of Ornithology
159 Sapsucker Woods Road
Ithaca, NY 14850

More information about the nest record card program will appear in the next issue of *Sialia*. Remember, we are depending on you to make this program a success. The staff at Cornell and the NABS Executive Committee thank you in advance for your cooperation.

72

*Sialia*, Spring 1982
North American Nest Record Card filled in front and back by Robert Schutsky as a sample.

**NORTH AMERICAN NEST-RECORD CARD PROGRAM**

<table>
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<th>Species</th>
<th>Eastern Bluebird</th>
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<td>Observer (two initials, last name)</td>
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</tr>
<tr>
<td>Locality (in relation to nearest town)</td>
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</tr>
<tr>
<td>County</td>
<td>Chester</td>
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<td>PA</td>
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<tr>
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<tr>
<td>Latitude</td>
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</tr>
<tr>
<td>Longitude</td>
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**HABITAT (circle where appropriate):**
- Woods 2 Swamp 3 Marsh 4 Field 5 Grassland 6 Desert 7 Tundra 8 Suburban 9 Urban 10 Other (specify)
- Coniferous 02 Deciduous 03 Mixed 04 Orchard 05 Cultivated 06 Fallow 07 No Veget. 08 Hedge 09 Shrub 10 Salt 11 Braekish 12 Fresh 13 Sandy Beach 14 Gravel Beach 15 Other (specify)
- Dominant Plants (inhabitant one or two) wheat grass

**NEST SITE (circle where appropriate):**
- Bare ground 02 Or ground in vegetation 03 Floating 04 Low vegetation 05 Shrub 06 Palm 07 Deciduous tree branch 08 Deciduous tree cavity 09 Conifer branch 10 Conifer cavity 11 Nest box 12 Other structure 13 Cliff or bank 14 Other (specify)
- Principal Plant or Structure Supporting Nest metal fence post

**Supporting Nest:**
- Nest fence post
- Nest box
- Nest

**HEIGHT OF EGGS ABOVE GROUND OR WATER IN FEET (feet and tenths if under five feet):** 40

**If parasitized by Cowbird check here:**
- If same host had other nestings this year, indicate which this is (1. 2. 3.)
- Use separate card for each nesting

**PLEASE COMPLETE BOTH SIDES OF THE CARD**

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<th>No. Col. 1-12 (Col. 2-14, side 1)</th>
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<th>Date</th>
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</tbody>
</table>

**COMMENTS:**
- Stage of building, if eggs warm, age of young, if banded, etc.
- Young 1 day old
- Removed unhatched egg
- Banded young
- Young in nearby tree with adults

**OUTCOME INCLUDING CASES WHERE OUTCOME UNKNOWN (circle where appropriate):**
- Outcome Unknown because not revisited
- Nest empty, intact
- Nest empty, damaged
- Nest deserted
- Failure due to weather
- Failure due to predation
- Failure due to human activities
- Failure due to competition with other species
- Failure due to parasites (give details separately)
- Failure due to pesticides (give details separately)
- Failure due to carnivores

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

Use a dark pencil (#2) to complete nest record cards.
Those of us who enjoy wildlife often dream of turning our yard, or at least a portion of it, into a sort of “wildlife paradise” full of the flowering, fruiting shrubs and vines that most wild creatures find so irresistible. Unfortunately, if we were to go out and purchase all the plants envisioned, the creation of such a paradise would be quite an expensive project. That’s the bad news. The good news is that with just a little planning and a bit of patience, that wildlife garden of your dreams can be created at little or no expense.

While some people subscribe to the “Robin Hood Theory of Wildlife Gardening” and simply dig plants from the bounty of nature (or their neighbors) to add to plant-impovery areas, most individuals would not feel right about such activities unless they knew that the collecting area was destined for destruction. So it would seem that the next best thing to transplanting would be to collect seeds from wild plants we wished to cultivate, but this is a hit-or-miss process at best. Sown in autumn (since the seeds of many native plants require a cold period to break dormancy), some of the seeds will no doubt germinate the following spring, but some will take even longer, and others may never show themselves at all.

A more reliable way to increase our stock of wildlife plantings is by vegetative propagation (cuttings and layering) of favored shrubs and vines. Layering is a very simple method of propagation which often occurs naturally among trailing plants and vines, many of which form roots wherever they come in contact with the ground. We can easily take advantage of this natural phenomenon and “fool” Nature by burying a small portion of the stem ourselves. This is best accomplished in early spring and is most successful when dormant, one-year-old shoots are used. When rooting has occurred after several weeks (sometimes longer depending upon the species), the new plant is severed from the parent plant and dug to be reset in the garden. Layering provides us with good-sized plants and works well for vines such as Japanese Honeysuckle (Lonicera japonica) and Bittersweet (Celastrus sp.), and almost any shrub that has branches supple enough to be bent to make contact with the soil. The woody plants, however, should be “wounded” by scraping the bark away on one side of the stem prior to burying that portion. After this section is covered with about three inches of soil, it may need to be held down with a rock (which will also serve to mark the site of your new plant). Aside from keeping this area moist (a mulch helps), there is nothing more to be done until it is time to place your new plant in the garden.

While layering is a depend-
The technique of "layering" is a simple way to obtain new plants. Where the stem is buried, roots will form, resulting in a new plant.

**Parent Plant with Layered Offspring.**

A useful method of propagating the plants already on your property, it is, of course, not a practical way to collect native plants from the field. For this purpose it is far more convenient to take cuttings, and this technique will be the subject of the next article.

P.O. Box 110
E. Hampstead, NH 03826

*With this issue of Sialia we welcome the regular contributions of Karen Blackburn.*

Fitted by interest and training to continue the "Plantings for Bluebirds and Other Wildlife" series, her twin enthusiasms of wildlife and gardening are, in her words, "rooted" in her childhood. Formal education at the University of Massachusetts emphasized Plant and Soil Science. Currently, she is "wildlife gardening" in the vicinity of her southern New Hampshire home.

After several initial articles featuring plant propagation, the series treating individual species of plants attractive to wildlife will continue.
Dear Editor:

I just got through reading Sialia, Vol. 3, No. 4. When I got to page 159 and read “Alert to All Bluebirders” I knew I had to write. I had the same problem as Mrs. Bob Raleigh of Lanark, IL, so I bought the book How to Control House Sparrows. The book was so interesting that I couldn’t put it down until I had finished it. Don Grussing, the author, mentioned two sparrow traps. I bought one which was expensive but well worth it. I have trapped over 300 House Sparrows.

I have stragglers but I don’t worry; I have until February to trap the rest. If I don’t catch them in the sparrow trap they will get caught in the bluebird houses (I bought traps for them also).

Since I have trapped the sparrows I have had bluebirds, chickadees and Tree Swallows nesting in my houses. I even had two woodpeckers sleeping in two at night.

Happy Reading and Happy Trapping.

Christine Paonessa
Akron, Ohio

Dear Christine Paonessa:

Your success trapping House Sparrows should provide encouragement to all bluebirders who are troubled by those pesky birds. The book you mention so glowingly is now being sold by NABS for $4.00 plus .50 postage. (20 sales tax must be added by MD residents).

Dear George O’Neil:

Using bluebird boxes as 150 yard markers on golf courses has been reported before (Sialia 3:73), but it is such a useful idea that it bears repeating. We wish you continued success with the boxes at the Allegheny Country Club.

Dear Editor:

At our Allegheny Country Club golf course, authority has been granted to install bluebird boxes on pipes driven into the ground 150 yards from 13 of the 18 putting greens at the suggestion of “Edie” Paffard, nature lover and head of the Planning Committee.

Green pipes are already in the ground and 13 houses, recently purchased from NABS, are being prepared for top-mounting by mid-winter. The boxes will be painted white (club colors are green and white) and will be located near small wooded patches or scattered trees—at exactly 150 yards from appropriate greens. Since there are already nine boxes scattered on the course, this will bring the available total for 1982 nesting up to 22. Last summer 24 young bluebirds were banded from the nine boxes.

I don’t know whether or not this is a “first” in the way of marker use, but this note passed along to other bluebirders may lend an assist to both players and bluebirds on other golf courses.

George P. O’Neil
Sewickley, Pennsylvania
Dear Editor:

I purchased a set of the NABS slides from Richard Tuttle and then got busy working on a presentation program for meetings this fall.

An elderly friend who is a lover of bluebirds offered to make side-opening and top-opening boxes according to your specification for people who wanted to help us.

I have just presented my first program and people bought 11 boxes.

I use my poem as a "kick-off" for my program.

Charlotte Jernigan
Wagoner, Oklahoma

My strategy is to allow the sparrows to spend a couple of weeks working on their nest before removing it. Early removal means that they really haven't lost all that much in terms of time and effort when they renest. I do have enough nesting boxes to provide for most the Tree Swallows in the area and have some "sparrow trap" boxes as well. Unfortunately, I do not have any bluebirds nesting along the trail.

Bruce Duncan
Caledonia, Ontario

Dear Bruce Duncan:

Your suggestion makes sense. Anything that helps to waste the time and energy of those pesky House Sparrows is worth using; however, for those faint-hearted souls who can't bring themselves to destroy eggs, continue to remove nesting material even though it requires a more concerted effort.

I'm sure you would like a few bluebirds nesting along your trail, but don't apologize for having only Tree Swallows. They are valuable cavity nesters also.

Dear Editor:

Here's a suggestion regarding House Sparrows that I'd like to pass on to your readers. I have had good luck in reducing their numbers along my trail by allowing them to establish a nest in a box (to egg stage), and then approaching the box on an overcast day with light rain. The birds seem to sit tight in such weather and I am able to capture one or the other of the adults and remove nest and eggs all at once. The nesting material also becomes soaked once left on the ground and so is unusable by sparrows for a short time should the bird not captured take a new mate and try to rebuild.

John Chrisbacher
Smyrna, New York

Dear John Chrisbacher:

Thanks for your suggestion. I don't know if we have the space for a regular feature, but, for those who might be interested in taking you up on your offer, I will print your full address. Thanks for your aid to bluebirds (and other native cavity nesters). RD 1, Box 20, Smyrna, NY 13464.
BLUEBIRD TALES

Mary D. Janetatos

This column should be subtitled, "How Not to Feed Bluebirds in Winter." At the time I’m writing the snow covers the ground to a depth of about two feet. Up to the time the snow fell, I had fed only sunflower seed and had kept the birdbath water thawed. Several times the yard played host to "my" four bluebird youngsters (two males and two females). They would drink from the birdbath, land on the nesting box and soon fly away.

Then came bitter cold and snow in amounts unusual for this Maryland suburb of Washington, D.C. One Saturday bitter cold followed a freezing rain. These conditions conspired to create a most difficult survival situation for bluebirds as their food supply of wild berries became inaccessible.

In an attempt to help them I decided to research “feeding bluebirds” in Sialia. Volume 1, No. 1 and 2 had information by Col. Robertson and Vera McLean Gourley on feeders and cornmeal mixtures. When I put these out my sporadically appearing bluebirds stayed away, but the local mockingbird moved right into my yard and began feasting on and defending the "bluebird" food. Now I have no starlings (he chases them), no bluebirds (have they survived?) and one cheeky mockingbird!

The January weather hampered other things too. Usually when Editor Jo Solem delivers Sialia, our small army of bluebirders moves the boxes quickly off my living room floor and into the mail. This time, with snow upon snow, the cartons just sat and sat. An idea took shape when some neighborhood children who were snowed out of school came by my house and volunteered to shovel my driveway. After the driveway was shoveled they needed to get warm. That’s when I introduced the new non-electronic game: “Stuffin’ Sialia.” Another friend in the neighborhood, Ann Jennings, hired five “thawing-out” youngsters to do the same thing in her house. The following youth rol!

call is added to those who have befriended the bluebirds: Kirsten, Aaron and Kate Moore, Jennifer Jennings, Karen Pouliot, Adriana and Monica Gutierrez, all of Countryside in Silver Spring, MD.

From elsewhere news trickled in via mail and telephone: Bryan (Canadian Board Member) and Hazel Shantz of Alberta have moved to Red Deer, near the Charlie Ellis Bird Farm (Sialia 4:34). Bryan has interesting plans for promoting Mountain Bluebird conservation there. From California, Paul Stork of Santa Barbara sends captivating photographs of Western Bluebirds taken at his weekend home near San Miguel. Articles from local newspapers sent to us by Herman Olson of Custer, Wisconsin, tell the bluebird story there.

Herman Bieber, of Albany, has sparked interest in the state bird (Eastern Bluebird) by promoting nest-box making and monitoring through the Telephone Pioneers of America. His cleverly designed bumper stickers proclaim a multiple message: Bluebird Conservation, Telephone Pioneers, and We ❤️ New York! Chuck Sorley and Ken Friedman of the Lehigh Valley Conservancy near the ideal bluebird habitat of the Pennsylvania Dutch Country have been busy setting up trails throughout the area. Farther south, in the Media-Swarthmore suburban Philadelphia area, Bob Bodine is continuing his long-time efforts to spread the bluebird word resulting in new members. One of these is Newton E. Tucker, reported by daughter Peggy Thompson to be helping Bob with his bluebird trail.

Irene Cook Pipkin, formerly of Silsbee, Hardin County, TX, writes from Dallas of her efforts to stimulate bluebird interest in her home town
through the local newspaper, the *Silsbee Bee*. She reminisces about an ill-fated bluebird trail composed of corrugated waterproof nestboxes which were set out in a cow pasture and ended up as fodder—the cows ate them all! So now she is boosting the NABS plywood nestboxes.


Fran Hanes of Utica, NY, sent a news flyer from the Environmental Management Council which details the Oneida Bird Club’s efforts to promote bluebird conservation throughout Oneida County. Past NABS President George Grant and his wife Marilyn have long been active there; this year’s bluebird project chairman is Larry Flick. In Dutchess County, NY, Florence and Homer Germond claim that 1981 “was a super [year]... With over 150 boxes we reared to flight a few over 400 [bluebirds] of which I banded 333!”

A letter arrived recently from a new friend, Fran Howe, whom Larry and Olive Zeleny and I met in 1979 when Larry spoke to the Vermont Natural History meeting. Fran has a TV talk show which reaches from Vermont into northern New York. She writes, “I have had good bluebird reports from my TV viewers. I said on one program that I was afraid the very nature of the bluebirds was working against them. Well, you can see from the enclosed letter they fight back in some areas—the most encouraging words I’ve heard.” In the letter a viewer described bluebirds “skirmishing” with Tree Swallows for possession of two nestboxes on her property. Since she also appreciates the “snappy little Tree Swallows,” she applauded when they eventually set up housekeeping peacefully in nesting boxes rather near each other.

Charlotte Jemigan gave a bluebird talk in Wagoner, OK, recently. It stimulated much interest judging by the many requests we received for Larry’s book from folks in Oklahoma, several of whom mentioned Charlotte’s presentation.

Long-time members will recall President Jeanne Price’s prodigious efforts to bring about the creation of a series of four bluebird postage stamps: Eastern, Western, Mountain and fledglings. This marvelous idea now is doomed because the Stamp Advisory Committee has approved a “State Birds and Flowers” series of U.S. postage stamps. Bluebirds will appear on four stamps: Missouri and New York (Eastern Bluebird); Idaho and Nevada (Mountain Bluebird).

All age groups help the bluebirds. Retirees form the backbone of the office helpers, trail work is done by adults and youngsters, talks are given by all who are old enough to stand before a group, etc. Special mention here goes to our nestbox suppliers. The handsomely crafted cedar nestboxes which we sell in pairs are the work of Orville R. Rowe of Elkhat, IN. Orville is proud to be a World War I veteran. He tells us he has made over 10,000 bluebird nestboxes. “So I should know how!” Then our sturdy exterior-grade plywood side-opening nestboxes which come in assemble-it-yourself kit form as well as fully assembled are made by Indian Country, Inc., of Deposit, NY. This factory is owned and operated by Frank and Fannie Kamp and their eight offspring.

To round out our tale of age groups, the school children of Wheatley Center in Forestville, MD, under the capable guidance of Mrs. Marguerite Helminiak and other staff members, do a stupendous job of stuffing and sealing our information packets. Cedar Lane School children assist NABS also, under the supervision of Mrs. Kathy Kwach, by counting and boxing our stationery.

Altogether our efforts persist because, in the words of one eleven year old inquirer for bluebird information from Winnipeg, Manitoba, “I do not want to see the bluebird being a rare sight. That’s why I want to save the bluebirds.”
To the Bluebird

Come, the Spring's returned, O lovely Bird,
   Come, you need not be afraid,
Yonder house upon the fence post
   Was for you expressly made.

Fear no foe, for it's unlikely
   One will come to harm you here,
You can nest all unmolested
   Far out in the field so clear.

Hasten to yon barren locust.
   There survey the country round;
Notice too the house is fastened
   Barely five feet off the ground.

There's no need that I should tell you,
   Since you better see than I;
All the same, I'm apprehensive
   Lest you glimpse and pass on by.

Inasmuch as you'll be building,
   Note the likable terrain;
Many Watchers trail this region,
   Let them hear your sweet refrain.

You've been labeled, Bird of Happiness,
   And for this you qualify,
For your mellow song's the cheeriest,
   And you're like a June day sky.

C.B. Dickenson

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hummingbird at honeysuckle; 78
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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: Students (under 21) and Senior (over 60), $7.50; Regular, $10; Sustaining, $30; Supporting, $50; Contributing, $100; Corporate, $100; Donor, $250. Amounts over $5 are tax deductible.

Address:
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Box 6295
Silver Spring, MD 20906