



Bluebird

Summer 2004
Vol. 26, No. 3

Page 2 — Comments from Vice-president Steve Garr.

Page 3 — Letters to the editor.

Page 4 — There is still time to make your reservations for NABS' convention in Ithaca, New York, July 7-11.

Page 5 — As species, bluebirds are millions of years old.

Page 7 — Migration is influenced by climate change. Warmer temps mean earlier arrivals.

Page 8 — Examining status of Western Bluebirds from 1966 to 2002.

Page 9 — Predation and cowbirds pose problems for bottomland bluebirds.

Page 15 — Why are bluebird eggs blue?

Page 16 — Bluebirds migrate to find better weather and better resources.

Page 18 — Soap can solve the problem of wasps in nest boxes.

Page 21 — Bluebird news from shore to shore.

Cover Photo

Two male Tree Swallows battle over territory on their Minnesota nesting grounds. See page 20 for the full story. Photo by Jim Williams.





North American Bluebird Society

Founder
Lawrence Zeleny

President
Position vacant

Vice President
Steve Garr

Treasurer
Anne Little

Directors

David M. Cook, 2004
California

Arlene Ripley, 2004
Maryland

Pauline Tom, 2004
Texas

Robert Ewart, 2005
Saskatchewan

Teresa Kromel, 2005
Pennsylvania

Jim McLochlin, 2005
Nebraska

Stephan Pellkan, 2005
Ohio

Phillip Berry, 2006
Florida

Fawzi Emad, 2006
Maryland

Julle Kutruff, 2006
Virginia

Tena Taylor, 2006
Mississippi

Executive Director
Lisa Bulick

Executive Director Emeritus
Mary D. Janetatos

From the Vice President

Steve Garr

It is now summer, and many of our bluebirds have started nesting or are beginning a second nesting. We all know that the nesting season often presents us — and possibly even the bluebird — with a variety of unexpected changes. In recent months our organization, the champion of the bluebird cause, has also experienced change. But, of course, just like the bluebird, we will adapt.

The next letter you receive in this column of *Bluebird* will be from the new president of NABS. In December 2003, after many years of service for NABS, president Dean Sheldon, chose to resign as NABS president. I assumed the NABS leadership position. As stated in the NABS bylaws, in the absence of the president, the vice-president shall “perform the duties of the president.”

As vice-president, my duties often involved working with Dean. I miss those discussions which helped plan the future of NABS. Of course, NABS doesn't depend upon any one person alone. We have dedicated officers and board members that continue to work diligently for the organization, and I feel honored to work with such worthy conservationists.

NABS often works side-by-side with Affiliate organizations, and as the affiliates continue to grow they will have opportunities to participate along with NABS in funding research grants. Together NABS and the affiliates will be able to continue the conservation effort for which NABS has been known and respected.

Personally, this year also came with a big change for me: a move from Tennessee to Missouri and a new job. I am fortunate in that my new job gives me

many opportunities to talk about bluebirds, something I love. The move brought me to Missouri where the bluebird is the state bird. My new residence came with House Sparrows, but with a little work, bluebirds now call it home. In most of life, I think, opportunities can be captured and obstacles overcome by just a little work and the ability to adapt to change.

I am looking forward to seeing all of my good bluebird friends at the Convention in July in New York! I hope that, even if you have never been to a NABS convention, you will make an attempt to come to this one. NABS is a great organization!

Two for \$30

Want to share the joys and excitement of bluebirding with friends? Buy **two gift memberships for the price of one**, two household memberships for only \$30. Send NABS the names and addresses of two friends who would like to know more about bluebirds. Include your check — \$30 for each pair of names.

This offer is valid until July 15, 2004.

Send your check or money order in U.S. funds (only \$30 for each pair of names) to: Two for One, NABS, P.O. Box 244, Wilmot, OH 44689.

Include your name and address as well so we know who is giving this wonderful gift.

From the Executive Director

Lisa Bulick

Now that spring has arrived, we are all monitoring our boxes for another nesting season. Whether we are backyard bluebirders, with only a couple of boxes, or maintain large trails on our own land or elsewhere, in a park, golf course, prison, or a nursing home, we are all engaged in the important work of bluebird and native cavity-nesting bird conservation.

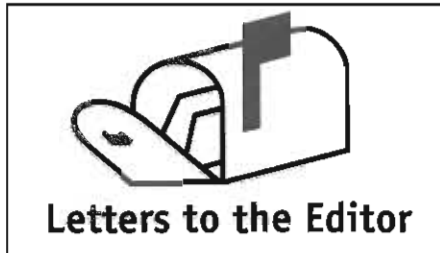
One of the things I enjoy most about the community of bluebirders is how, when we meet at conventions or meetings or talk on the phone, the conversation always gets around to, "How are your birds?" Then, we share numbers, anecdotes, opinions, and information about how our past birding season was and how the new one is shaping up.

What we are doing is connecting our small contribution to bluebirds to the larger conservation picture. Each of us acts in our own area, creating our own small bluebird refuges. As bluebirders, we act locally, but our actions have greater implications. Effective conservation—whether it applies to birds, water, air, forests — happens with individual or local contributions to the ecological whole.

As backyard bluebirders or trail monitors, as individual birders or as affiliate members, we all need to connect to the larger framework of bluebird conservation. This is why the North American Bluebird Society exists: to connect the pieces across the continent so that Eastern, Mountain, and Western bluebirds can be helped in the largest possible context. In this way, our mission of education, research and conservation is achievable.

This month, please help this organization grow by making a commitment to

encourage one friend to join NABS. With you — and the additional support of your friend — NABS can do so much more to educate others about protecting bluebirds and other native cavity-nesters.



Finance committee member disavows budget summary

To the editor,

On page 3 of the Spring 2004 issue of *Bluebird* (Vol. 26, No. 2.), the executive director published a column with my name listed at the bottom of a budget summary. This was done without my knowledge and without my consent. I do not believe the budgetary matters discussed to be an accurate representation of the facts.

I believe it is time to make some major changes in the operation, orientation, and goals of NABS. This is essential for it to remain a viable organization, dedicated to the preservation of bluebirds.

— *Fawzi Emad, member of the NABS board of directors, member of the Finance Committee, president of the Maryland Bluebird Society. He can be reached by telephone at 301/977-3922 and by e-mail at femad@comcast.net.*

More letters on page 4

Bluebird

Published by
**The North American
Bluebird Society**

P.O. Box 244
Wilmot, OH 44689

Lisa Bulick
Executive Director

330-359-5511

lisabulick@nabluebirdsociety.org

www.nabluebirdsociety.org

Questions should be directed to the NABS headquarters address/telephone number shown above.

The NABS web site offers answers to many questions.

Editor: James J. Williams
345 Ferndale Road N.
Wayzata, Minnesota 55391
E-mail two-jays@att.net

Bluebird/Sialia (ISSN 0890-7021) is published quarterly by the North American Bluebird Society, P.O. Box 244, Wilmot, Ohio 44689. Subscription price is included in annual membership dues. Single copies: \$5. Write for information about bulk quantities. Checks and money orders are made payable to North American Bluebird Society, in U.S. funds. Issues are dated Winter, Spring, Summer, and Autumn and appear approximately on the fifteenth of January, April, July, and October. Deadline for submission of material is three months prior to date of publication.

Letters to the editor and articles in this magazine express the opinions and positions of the authors. Letters may be edited for length and content. Articles published do not necessarily represent the opinions and positions of the officers, directors, or employees of the North American Bluebird Society.

For advertising information, contact the executive director.

— Letters

Member questions officer situation

To the editor,

What in the world is going on at NABS? I opened the Spring 2004 issue of Bluebird Magazine to the "From the President" column only to discover it titled "From the Vice President". I then turned to the masthead only to see that we have no president. No president! What happened? Did we eliminate the office of president? Did he resign? If so, shouldn't the masthead show: President (vacant)? What in the world is going on? I think the members of NABS are owed an explanation.

I was also disappointed to see that the list of candidates for NABS leadership, shown on page 11, included only one candidate nominated for each office (except where no one is running). I think the membership deserves a choice, especially for the most important leadership positions. From this article I gather the office of president was not abolished, just temporarily misplaced. What is going on?

— *Randall W. Downing, Galena, Illinois*

Eno says kestrel boxes and trap are compatible

To the editor,

I would like to respond to the comments of John A. Smallwood in regards to building an American Kestrel nest box (Bluebird, *Winter 2004*). Dr. Smallwood said that the VanErt in-box starling trap should not be used because it could easily injure kestrels.

There is still time to make plans to attend the NABS convention

The 27th annual convention of the North American Bluebird Society will be July 7-11 in Ithaca, New York. Hosts will be members of the New York State Bluebird Society. There still is time for you to register for this exciting event. For registration information, For information go to www.NYSBS.com, telephone 607/844-9167, or send an email message to klip@clarityconnect.com.

An impressive roster of speakers will be present. They include Raymond Briggs, a bluebird advocate; Dr. John Fitzpatrick, director of the Cornell Laboratory of Ornithology in Ithaca; Dr. Patricia Gowaty, one of the world's foremost researchers on bluebird behavior and biology; Kevin McGowan, research biologist at the Cornell Lab of Ornithology; John Rogers, naturalist and lecturer; and Charles R. Smith, a natural resources researcher with Cornell.

Entertainment will include a performance by the Fly Creek Philharmonic, a group that recently appeared on the Prairie Home Companion radio program, and songs by James Krueger, guitarist and balladeer.

Field trips will be available to Montezuma National Wildlife Refuge, the Rockwell Museum and Corning Museum of Glass, the National Warplane Museum, the Catskill Mountain region, and the John Rogers Bluebird Trail where hundreds of nest boxes have been maintained for decades.

The in-box starling trap is identical to the VanErt in-box sparrow trap with the exception of the size. There have been thousands of VanErt sparrow traps used in bluebird boxes across North America for several years with no reports of harm to bluebirds. I have used the VanErt starling trap on kestrel boxes, flicker boxes, and wood duck boxes with no harm to any of the birds. I have also used the VanErt sparrow trap for many years.

In addition, Bluebirds Across Nebraska has a trail of kestrel boxes along Interstate 80 and the trail monitors have successfully used the VanErt trap to

catch starlings with no harm to any kestrels (or even the starlings).

Being very familiar with this trap, I don't see how it could possibly harm a kestrel or any other bird that entered the box.

—*Steve Eno, Raymond, Nebraska*

As species, bluebirds have been with us for millions of years

Bluebirds as species have been around for a long time, for millions of years. The bird family to which bluebirds belong, the thrush family, is traced to the Pliocene epoch, from two million to seven million years ago.

Fossil evidence, as you might imagine, is slim. Small, delicate creatures like bluebirds are less likely to leave such remains than larger animals, like dinosaurs.

There is fossil evidence, however, for two of our three species, Eastern and Western bluebirds. No such evidence for the Mountain Bluebird species has yet been discovered.

Fossil remains attributed to Western Bluebirds, dating from the Pleistocene period (2 million to 10,000 years ago) have been found in Carpinteria, California. Other fossil remains identified only as belonging to a *sialia* species have been found at Rancho Le Brea in the same state.

For the Eastern Bluebird, the first fossil remains discovered were three leg bones in an abandoned lime quarry in Florida. They were among other remains of late-Pleistocene animals. A cave in Illinois contained Eastern Bluebird fossils dating to 8,000 to 10,000 years ago. Caves in Wyoming and New Mexico also have yielded fossils, these dating from 10,000 to 25,000 years ago.

The best evidence of the age of these birds comes not from ancient bones but from the DNA of the today's bluebirds. Scientists can track the history of a species and its relation-

ship to other species by examination of mitochondrial DNA.

Mitochondrial DNA (mtDNA) is present in large numbers in each cell of an organism. The sequence in which these DNA molecules are linked varies among organisms, allowing researchers to distinguish one group of organisms from another. It evolves too slowly to be useful in telling one individual organism from another.

In addition, mtDNA is maternally inherited, so that any maternally related individuals might be expected to share a similar mtDNA sequence. Thus, study of two species could determine if at some point in the distant past two now-distinct species once had what amounts to a common mother.

Eastern and Western bluebirds are the most similar in plumage and body structure of the three bluebird species. Some researchers believe that these birds stem from a common ancestor, elements of this single population being isolated east-west from each other around the central Great Plains region of North America during the Pleistocene period (as many as two million years ago). It is postulated that these two isolated populations of one species then evolved into the two species we know as Eastern and Western bluebirds. mtDNA studies published in 1997 suggest that Eastern Bluebirds evolved into a species as long as 2.5 million years ago.

Another study has suggested that Eastern Bluebirds and Mountain Bluebirds may be more closely related to each other than to Western Bluebirds.

The Thrush Family

Bluebirds are included in the bird family Turridae, the thrushes. This family, sometimes called the true thrushes, has about 175 species worldwide, North America having 18 as breeding species or regular visitors. Other North American thrushes are Townsend's Solitaire, the spotted thrushes (Bicknell's, Gray-cheeked, Hermit, Swainson's, and Wood), the robins, and two robin-like species, the Aztec Thrush and the Varied Thrush.

Hybrids

Bluebird hybrids do occur, although that is rare. There is reported hybridization between Western and Mountain bluebirds and Eastern and Mountain bluebirds where their ranges overlap, and one report of Western X Eastern hybrids from a captive pair.

(Information for this article was taken from monograph series published as The Birds of North America, supported by the American Ornithologists' Union, Cornell Laboratory of Ornithology, and the Academy of Natural Sciences. The monographs used were Mountain Bluebird, series No. 222, by Harry W. Power and Michael P. Lombardo; Eastern Bluebird, No. 381, by Patricia Adair Gowaty and Jonathan H. Plissner; and Western Bluebird, No. 510, by Judith A. Guinan, Patricia A. Gowaty, and Elsie K. Eltzroth, the latter a NABS member. Individual monographs may be purchased from Buteo Books for \$7.50 plus postage (\$4 for the first volume, \$1 for each additional). Buteo can be reached at 800/722-2460 or by e-mail at allen@buteobooks.com.)

Nature's Way ™

The Industry Leader

Producers of Live Food Totally Pest Free!

ATTRACT WILD BIRDS WITH MEALWORMS!

- Shipped only M-W to guarantee live delivery
- Order 24 hours a day
- Door to Door Service

Free Brochure on Request

1-800-318-2611 • FAX 513-738-4667

info@thenaturesway.com

P.O. Box 188, Ross, OH 45061-0188

www.thenaturesway.com

“Feeding live insects to the wild birds in my yard has helped me build a special bond with individual birds.”

—Julie Zickefoose

Study shows bluebirds, swallows returning earlier as temperatures warm

Are birds responding to the temperature gain our climate is experiencing? A recently published study from Alberta shows that both Mountain Bluebirds and Tree Swallows are returning earlier each spring for the last 40 years, on average. The return dates parallel average temperature gains during the same period.

The paper was written by Robert K. Lane and Myrna Pearman. Ms. Pearman is chair of the NABS technical advisory committee. Dr. Lane is the chairman of the Ellis Bird Farm Research Committee. It was published in the journal *The Canadian Field-Naturalist*.

Mr. Lane and Ms. Pearman plotted the dates of first spring observation of each species in an area in central Alberta. Information for first observed arrival dates for Mountain Bluebird and Tree Swallow came from a variety of sources. Temperature data used was collected nearby at a Canadian government facility.

There is considerable annual variation. However, over 41 years, Mountain Bluebirds on average have been arriving four-tenths of a day earlier each year. This might not seem like much until you do the math and find that birds now appear each spring on average a full 16 days earlier than they did in the early 1960s. Temperature gains during that same 41-year period are almost parallel to the graph of arrival dates.

The same phenomenon is shown for Tree Swallows. That species has a first-arrival date increase of one-quarter day per year. That adds up to arrival now 10 days ahead of arrival 40 years ago. Again, the temperature gains parallel

the arrival date gains.

As the temperature has warmed, the birds have returned to breeding territory earlier and earlier.

The researchers add that many factors can influence arrival dates, including weather on wintering grounds and on migration routes. They conclude by suggesting that the correlation of dates

and temperature gains warrants more study. The authors also say that they are concerned that early arrivals of male bluebirds, followed by cold and snowy spring storms, could have negative impact on the survival of many birds. During 2003, a number of female birds were noted alone by nest boxes, the authors of the study reported.

— *Jim Williams*



As average seasonal temperatures increase, bird species are returning to nesting grounds earlier, studies find. These Tree Swallows are on territory near Minneapolis, Minnesota. The box is a Gilwood by Steve Gilbertson.

Examining Western Bluebird status in North America 1966–2002

By **Bernie Daniel, Ph.D.**

The Western Bluebird is one of the most recognizable of North American birds. An obligate cavity nester, the Western Bluebird (like the other two bluebird species) has been negatively impacted by at least three factors:

- 1) The introduction of aggressive exotic avian species (e.g., European Starling).
- 2) Diminishing numbers of natural cavities (e.g., removal of snags).
- 3) Loss of habitat as a result of fire suppression and the concomitant reductions of open, grassy understories.

On the other hand, the bird has benefited from the dedicated efforts of bluebirders across the western U.S. and Canada who have provided thousands of artificial nest cavities.

As part of a larger project to examine population and range trends for the three bluebird species, I downloaded the field data for these species from the North American Breeding Bird Survey (BBS) database. The BBS is the largest and most comprehensive source of information on avian abundance and distribution in this hemisphere.

I plotted survey count data onto maps of North America at the locations where Western Bluebirds were detected. Using this approach the count data for each year (or groups of years) can be examined separately so that both spatial (range) and population (abundance) trends can be observed.

An example of this approach is illus-

trated on the map in Figure 1, which shows the sites where Western Bluebirds were detected during the years 1966 through 2002. On this map the dots are placed at the start point of a BBS route and the size of the dot represents the *average* number of Western Bluebirds detected for that route over the time period indicated.

Thus, changes in Western Bluebird population and distributions can be examined by comparing maps from various time intervals. When the map in Figure 1 is compared to the analogous map for the 1968 to 1975 period, the earliest years of the BBS in western North America, there does not appear to have been observable increases in either the numbers or in the range of Western Bluebirds (space does not permit showing more maps).

This observation stands in sharp contrast to the results seen when I compare the analogous maps for the other two species, Eastern Bluebird (*Sialia sialis*; EABL) and Mountain Bluebird (*Sialia currucoides*; MOBL) over these same time periods. Both of the other two species appear to have both increased their numbers and expanded their ranges over the 36 years of the BBS (i.e., comparing mid-1960 versus late-1990 periods).

To confirm whether my conclusions were valid, I used statistics to calculate population trends for all three bluebird species across their respective ranges. The impression gleaned from my GIS analysis appears to be supported. The BBS statistical trend models indicate that, of the three bluebird species, only

the Western Bluebird has failed to show a statistically significant population increase over the last 36 years.

In fact, the data from the BBS indicates a small downward trend estimate for Westerns. However, this negative trend value is not statistically significant and it illustrates how difficult it is to estimate continent-wide avian population trends even with a monitoring program as massive as the BBS. Significant numbers or not, I'm sure we would all agree that this trend value for WEBL is in the wrong direction.

Lastly, I reviewed the Partners In Flight (PIF) program's current assessment of the Western Bluebird. PIF serves to coordinate the activities of most bird conservation efforts in North and South America. PIF's assessment program also views the Western Bluebird as a species in need of attention.

The basis for PIF concern is that a high percentage (estimated at nearly 30 percent) of the total Western Bluebird population occurs within a relatively small area (which PIF calls Physiographic Area 87; Figure 1) centered at the Four Corners region (the point where Colorado, Utah, New Mexico, and Arizona meet).

This area is deemed essential for the conservation of Western Bluebird, but the concern is that the BBS trend models show that even within this critical region, numbers of this species may not be increasing.

Does all of this mean that the Western Bluebird is in trouble? Not necessarily, in my opinion, I would guess that the

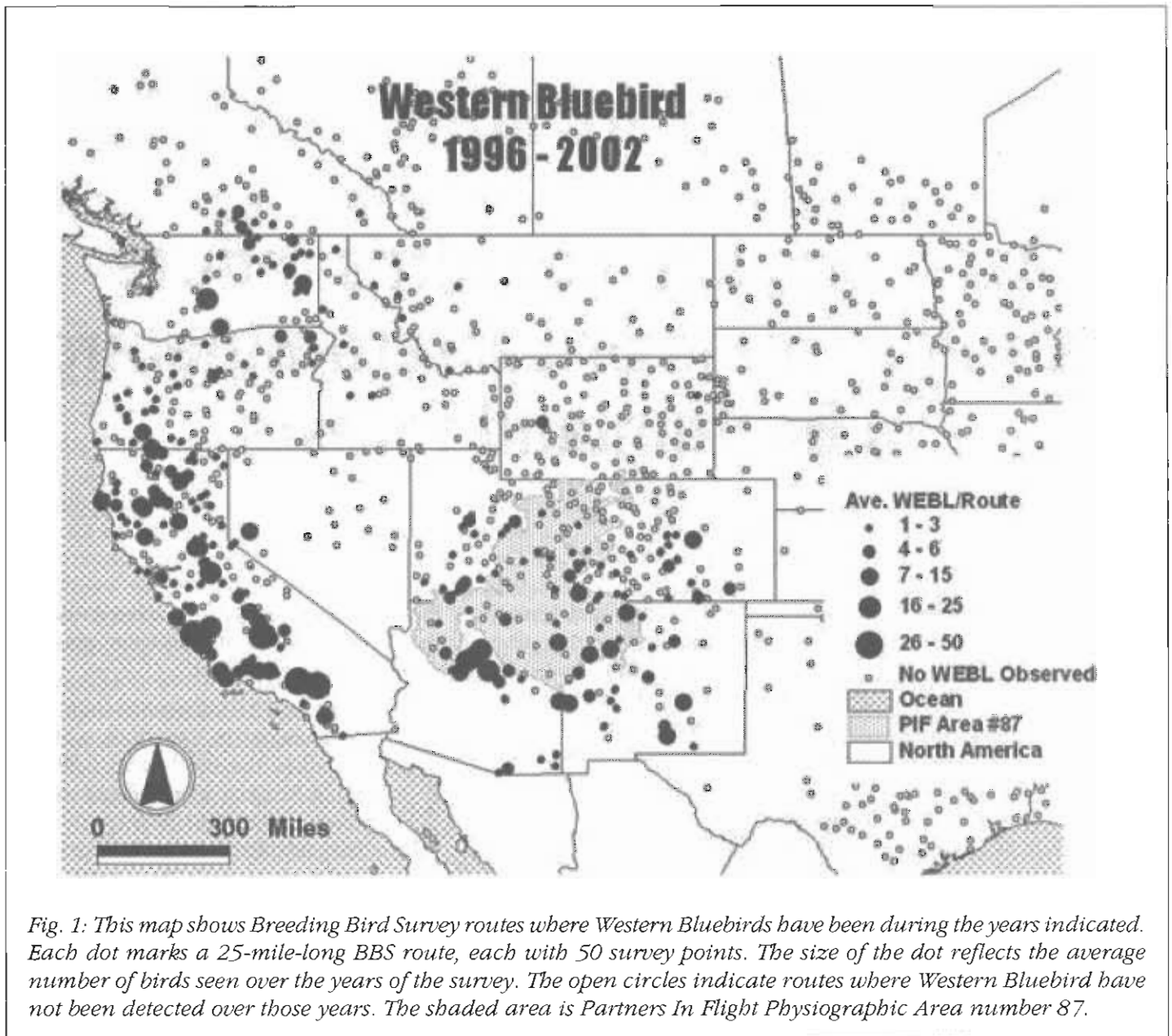


Fig. 1: This map shows Breeding Bird Survey routes where Western Bluebirds have been during the years indicated. Each dot marks a 25-mile-long BBS route, each with 50 survey points. The size of the dot reflects the average number of birds seen over the years of the survey. The open circles indicate routes where Western Bluebird have not been detected over those years. The shaded area is Partners In Flight Physiographic Area number 87.

Western Bluebird is holding its own, due in great part, I expect, to the nest box trails maintained by bluebird affiliate organizations in its range.

Keep in mind that my analysis pertains to the total Western Bluebird population, with consideration of its entire range in North America. There may well be local areas within the range that are experiencing significant increases in Western Bluebird numbers.

I would be most interested to get the views of bluebirders who manage nest

box trails within the range of this species. In addition, I would like to know if this assessment reflects your general impression of the status of the Western Bluebird today.

I think the one aspect of this analysis that does concern me is why the Western Bluebird does not seem to be responding as readily, or as obviously, to our conservation efforts as the other two bluebird species apparently are?

I believe that this topic is worthy of consideration. For example, are there

aspects of the Western Bluebird's natural history or habitat requirements that might account for the more modest response to human assistance efforts, at least as compared to the other bluebird species?

(Dr. Daniel is co-chair of the NABS research committee. He can be reached by mail at 9211 Solon Drive, Cincinnati, OH 45242. His e-mail address is bdaniel@acninc.net.)

Raccoons and cowbirds reduce nesting success of Eastern Bluebirds in bottomland forests

By Jeffrey P. Hoover

Eastern Bluebirds are a favorite bird of many North Americans. Extensive nest-box programs have greatly benefited this cavity-nesting species. Bird enthusiasts enjoy watching bluebirds and providing nesting structures for them, and scientists have studied bluebirds to better understand mating systems, site fidelity, sex ratios, and parent-offspring interactions.

There is, however, surprisingly little information on the nesting success of Eastern Bluebirds breeding within certain areas, such as bottomland forests, that are different from the more typical habitats where bluebird nest-boxes are placed. Published rates of cowbird parasitism, rates of nest predation, and identities of nest predators are relatively rare for Eastern Bluebirds. Data are particularly sparse for nest boxes where nest predators and cowbirds were not excluded and for nest boxes that were far-removed (e.g. more than 540 yards/500 meters) from habitat edges that had been created by people (such as edge where forest meets agricultural field).

While studying several aspects of the

nesting ecology and behavior of Prothonotary Warblers in southern Illinois, I also obtained information on the nesting success of Eastern Bluebirds within the same bottomland and swamp forests. For the purposes of this paper, I wanted to document the use of nest boxes in bottomland forests by Eastern Bluebirds in relation to the other cavity-nesting species that were also using the boxes. I wanted to determine rates of brood parasitism by Brown-headed Cowbirds for bluebird nests. And I wanted to document rates of nest predation for bluebirds and determine the identity of the nest predators responsible for nesting failures.

I conducted this research within the highly fragmented bottomland forests of the Cache River Watershed (CRW) in southern Illinois. The Cache River meanders through the southern tip of Illinois to the Ohio River. Study sites included isolated wet floodplain forests, forested sloughs and backwaters, deep-water baldcypress and tupelo swamps, and natural levees along the Cache River.

The landscape surrounding these wet

forested habitats are about evenly distributed between agriculture, grassland, and upland forest.

I gathered my information from March 15 to August 15, 1994-2003, while engaged in the Prothonotary Warbler study. Nest boxes were placed on study sites in 1994. Nest boxes were made from modified 1.9-liter cardboard milk and juice cartons. These were placed at 30- to 40-yard intervals along lines in certain areas and at points spaced 30 to 40 yards in other areas. Habitat type determined placement.

Each nest box had a pull-off top to allow a clear view into the nest, two small holes in the bottom to allow water to drain from the box in case of flooding, and an entrance hole facing away from the tree to which the nest box was attached. I attached nest boxes to trees by using strapping tape wrapped twice around the tree and the nest box. Nest boxes were then spray-painted with a non-toxic dark brown paint on the outside, and through the opening to darken the inside of the nest box.

Nest boxes had openings that were approximately 1.7 inches in diameter,



Eastern Bluebird in tangle of vines. (Photo by Jim Williams)

and were placed 5.5 feet above ground on trees. They were meant to mimic the opening sizes and the average height of Prothonotary Warbler nests found in natural cavities in the region where this study was conducted. Nest boxes were cleaned out at the end of each breeding season and repaired/replaced as necessary prior to each subsequent breeding season.

In 1994, I began with 400 nest boxes distributed among eight study sites. By 2000, the project had expanded to more than 1,100 nest boxes distributed among 25 sites. I monitored every nest box at four-day intervals for the duration of the breeding season each year, and monitored active nests at shorter intervals (one to two days) during the egg laying, hatching, and late nestling periods.

I documented the number and status of eggs and nestlings (host and Brown-headed Cowbird) with each visit to active nest boxes and determined the fate of every nesting attempt (number of young fledging from the nest or the cause of nesting failure).

Table 1. Use of nest boxes placed in bottomland forests and forested swamps of the Cache River watershed in southern Illinois, 1994-2003. The figures show number of nests in boxes by species. EABL=Eastern Bluebird; CAWR=Carolina Wren; CACH=Caroline Chickadee; TRSW=Tree Swallow; PROW=Prothonotary Warbler.

Year	Total boxes available	EABL	CAWR	CACH	TRSW	PROW
1994	410	4	0	1	0	98
1995	754	11	7	5	0	244
1996	704	12	17	8	0	367
1997	999	20	30	4	4	491
1998	1029	36	50	13	4	550
1999	1144	10	31	7	4	409
2000	1144	12	28	6	2	394
2001	834	1	2	7	4	283
2002	1175	3	10	6	1	612
2003	1175	6	23	19	0	583
TOTAL	9418	115	198	76	19	4031

The identity of nest predators could be determined over 95 percent of the time based on the condition of the nest and its contents. Potential nest predators included raccoons (nest pulled out of opening and raccoon paw prints on nest box), black rats and speckled king snakes (nest intact, contents gone, no tracks on nest box), and southern flying squirrels (nest slightly disheveled, parts of eggs or nestlings remaining in nest, no tracks on box).

I then compared rates of cowbird parasitism and nest predation of bluebird nests among four months (April-July) of the breeding season for all years (1994-2003) combined.

There were five bird species that used these nest boxes. Of 4,439 nesting attempts in the boxes during 1994-2003, Eastern Bluebirds accounted for 2.6 percent of the nesters, with the remainder belonging to Prothonotary Warblers (90.8 percent), Carolina Wrens (4.5 percent), Carolina Chickadees (1.7 percent), and Tree Swallows (0.4 percent).

Rates of cowbird parasitism were high (13 to 21 percent) during April-June, but late-season (July) nests were never parasitized. Five bluebird nests received one cowbird egg, three received two, four received three, one received four, and one received five cowbird eggs.

Rates of nest predation were lowest in April (62 percent), highest in June (88 percent) and intermediate in May and July. Raccoons were the dominant nest predator across all months and accounted for 93 percent of all nest predation events. Snakes were responsible for only six percent of predation events, and southern flying squirrels were not implicated as a nest predator for the bluebirds in this system.

The effects of nest predation and brood parasitism combined resulted in an average fledging rate of 0.68 fledglings per nesting attempt.

Nest predation and brood parasitism

Table 2. Summary of nesting success by month for Eastern Bluebirds using nest boxes in bottomland forests and forested swamps of the Cache River watershed in southern Illinois, USA, 1994-2003.

Month initiated	No. of nests	Percentage parasitized (number)*	Percentage nest predation (number)*	Identity nest predators**
April	34	19.4 (31)	61.8 (34)	20R, 1S
May	30	13.0 (23)	73.3 (30)	20R, 1S, 1U
June	34	20.8 (24)	88.2 (34)	28R, 2S
July	17	0.0 (12)	73.3 (15)	10R, 1S
Total	115	15.6 (90)	74.3 (113)	78R, 5S, 1U

**(n)* represents the sample size of nests used to calculate percentages.

**number of predation events attributed to raccoons (R), snakes (S), or an unknown nest predator (U).

are important factors limiting the nesting success of birds. Rates of nest predation and cowbird parasitism are typically elevated for those birds breeding in landscapes where natural habitats are fragmented by agriculture and urban development. The rates of cowbird parasitism and nest predation reported here are relatively high compared to prior studies. This is not surprising given the landscape composition surrounding the study area, row-crop agriculture and pastures, which favors high densities of cowbirds and nest predators.

Several studies similarly have documented high rates of nest predation and brood parasitism for several bird species within this region of the Midwest. Rates of brood parasitism for Prothonotary Warblers using similar nest boxes on the same study sites were substantially higher (approximately 60 percent of all nesting attempts than for the Eastern Bluebirds, indicating that the warblers may be more vulnerable to cowbird parasitism than bluebirds.

Eastern Bluebirds may be more atten-

tive near the nest during the egg-laying period than the warblers, resulting in the lower rates of cowbird parasitism. It is possible that particular pairs of bluebirds are more prone to parasitism given the high percentage (64 percent) of parasitized nests that received multiple cowbird eggs. Lower rates of brood parasitism late in the breeding season (e.g. July) likely correspond with a decrease in cowbird breeding activity.

Rates of nest predation were high for bluebirds nesting in the bottomland forests, because of the high number of raccoons within the region. Raccoons are most abundant in bottomland and riparian systems in Illinois. Raccoon densities have increased substantially during the past three decades as a result of the absence of top predators, the collapse of the fur trade, and the conversion of natural habitats to agriculture and urban land uses.

Raccoons are typically attracted to wet features of the landscape where they forage heavily on organisms in and near the water. Bird nests that are located

over water or in close proximity to wet areas may be particularly vulnerable to predation by raccoons. The relatively low rates of nest predation in April may have been a result of typical spring floods. More and deeper water in the area may reduce nest predation by raccoons.

Results from nest boxes in "prime" bluebird habitat — that near houses or adjacent to fields, pastures, or orchards — contrast sharply with mine, typically having lower rates of nest predation and a different suite of nest predators. For example, a study by Radunzel and colleagues (1997) found that only 21 percent of more than 2,600 bluebird nesting attempts over a 27-year period in Wisconsin resulted in total failure, and that House Sparrows and House Wrens were primarily responsible.

In Tennessee, snakes accounted for 23 to 40 percent of all nest predation during 1941-1946 (Laskey 1946). In the bottomland forests in southern Illinois, nest predation by snakes was relatively unimportant and House Sparrows and House Wrens were not present.

This result highlights the fact that the effects of particular nest predators often vary between different habitats and regions, and that determining the identity of the primary nest predators is necessary to develop effective conservation strategies for a given area.

Rates of nest predation for the bluebirds in my study system were quite high relative to other studies, possibly because my nest boxes were attached directly to trees and were accessible to tree-climbing nest predators in an area with a thriving raccoon population.

I lacked information from natural cavity bluebird nests and was therefore unable to determine how well the nesting success in nest boxes might mimic that in natural nests. I did, however, find that raccoons were also the primary nest predator for Prothonotary

Warblers nesting on these same study sites in Illinois and, for the warblers, rates of nest predation were similar between nests in boxes and natural cavities (Hoover 2001). This result suggests that rates of nest predation may be high, in general, for secondary cavity-nesting species in this particular system.

Eastern Bluebirds nesting in these fragmented bottomland forests experienced poor nesting success as a result of high rates of nest predation and moderate rates of brood parasitism, which are a hallmark of fragmented landscapes in general.

Continued loss and fragmentation of bottomland forest habitat will likely promote even higher densities of raccoons, and expose even more nests to cowbird parasitism. Predator-proofing nest boxes and preventing cowbirds from entering nest boxes may increase nesting success in fragmented habitats, but it is only a band-aid solution.

Conservation efforts that attempt to reverse habitat loss and fragmentation (i.e., restoration) will provide long-term and lasting benefits to Eastern Bluebirds, Prothonotary Warblers, and other cavity-nesting species breeding in bottomland and swamp forests.

Acknowledgements *The tremendous efforts of dedicated field assistants greatly improved this research, especially those of Matt Reetz, Justyn Stahl, Leslie Rodman, Elizabeth Whetsell, Anthony Corso, Bryan Holliday, Brandon Johnson, Christin Kelly, Eric Peterson. I also thank the members of the Cache River Joint Venture (the United States Fish and Wildlife Service, The Nature Conservancy, and the Illinois Department of Natural Resources) for their assistance with the logistics of conducting field research in southern Illinois. The Illinois Natural History Survey, in particular the staff of the Center for Wildlife Ecology, provided critical support.*

Financial support for this work was provided by the North American Bluebird Society, the United States Fish and Wildlife Service (INT 1448-0003-95-1007), the Illinois Chapter of The Nature Conservancy, the Illinois Department of Natural Resources Wildlife Preservation Fund, The National Fish and Wildlife Fund, The R.J. Kosie Fund, Wings Over the Americas, the University of Illinois (Completion Fellowship and Travel Grant), the Decatur and Champaign County Audubon Societies, and Sigma Xi.

Any opinions, findings and conclusions or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of the agencies and organizations that supported the research.

Literature used in the preparation of this article:

- Faaborg, J., M. C. Brittingham, T. Donovan, and J. Blake. 1995. Habitat fragmentation in the temperate zone. Pages 357-380 in T. E. Martin and D. M. Finch, editors. *Ecology and management of neotropical migratory birds*. Oxford University Press, New York, New York, USA.
- Fleming, W. H., and D. R. Petit. 1986. Modified milk carton nest box for studies of Prothonotary Warblers. *Journal of Field Ornithology* 57:313-315.
- Gehrt, S. D., and E. K. Fritzell. 1998. Resource distribution, female home range dispersion and male spatial interactions group structure in a solitary carnivore. *Animal Behaviour* 55:1211-1227.
- Gehrt, S. D., G. F. Huber, and J. A. Ellis. 2002. Long-term population trends of raccoons in Illinois. *Wildlife Society Bulletin* 30:457-463.
- Gowaty, P. A., and W. C. Bridges. 1991. Behavioral, demographic, and environmental correlates of extra-pair fertilization in Eastern Bluebirds, *Sialia sialis*. *Behavioral Ecology* 2:339-350.
- Gowaty, P. A., and J. H. Plissner. 1998. Eastern Bluebird (*Sialia sialis*). In *The Birds of North America*, Number 381 (A. Poole and F. Gill, editors). The Birds of North America, Incorporated, Philadelphia, Pennsylvania.
- Greenwood, R. J. 1982. Nocturnal activity and foraging of prairie raccoons (*Procyon lotor*) in North Dakota. *American Midland Naturalist* 107:238-243.
- Herkert, J. R., D. L. Reinking, D. A. Wredenfeld, M. Winter, J. L. Zimmerman, W. E. Jensen, E. J. Finck, R. R. Koford, D. H. Wolfe, S. K. Sherrod, M. A. Jenkins, J. Faaborg, and S. K. Robinson. 2003. Effects of prairie fragmentation on the nest success of breeding birds in the midcentral United States. *Conservation Biology* 17:587-590.
- Meiske, W. J., S. K. Robinson, and J. D. Brawn. 1999. Predator activity and predation on songbird nests on forest-field edges in east-central Illinois. *Landscape Ecology* 14:345-354.
- Hoffmeister, D. F., and C. O. Mohr. 1972. *Fieldbook of Illinois Mammals*. Dover Publications, Inc. New York.
- Hoover, J. P. 2001. An experimental study of behavioral responses to nest predation and brood parasitism in a migratory songbird. Dissertation. University of Illinois, Urbana, Illinois, USA.

Hoover, J. P. 2003a. Decision rules for site fidelity in a migratory bird, the prothonotary warbler. *Ecology* 84:416-430.

Hoover, J. P. 2003b. Multiple effects of brood parasitism reduce the reproductive success of prothonotary warblers, *Protonotaria citrea*. *Animal Behaviour* 65:923-934.

Hoover, J. P. 2003c. Experiments and observations of prothonotary warblers indicate a lack of adaptive responses to brood parasitism. *Animal Behaviour* 65:935-944.

Ingold, D. J. 1998. Between-year nest-site fidelity in Eastern Bluebirds in Ohio. *Staha* 18:34-47. Laskey, A. R. 1946. Snake depredations at bird nests. *Wilson Bulletin* 58:217-218.

Mankowski, A. 1997. Summary. Pages 1-4 in A. Mankowski, editor. Cache River area assessment Volume 1 Part II living resources. Critical Trends Assessment Program (CTAP), Illinois Department of Natural Resources.

Martin, T. E. 1993. Nest predation and nest sites. *BioScience* 43:523-532.

Pinkowski, B. C. 1977. Breeding adaptations in the Eastern Bluebird. *Condor* 79:289-302.

Radunzel, L. A., D. M. Muschitz, V. M. Bauldry, and P. Arcese. 1997. A long-term study of the breeding success of Eastern Bluebirds by year and cavity type. *Journal of Field Ornithology* 68:7-18.

Ricklefs, R. E. 1969. An analysis of nesting mortality in birds. *Smithsonian Contributions in Zoology* 9:1-48.

Robinson, S. K., S. I. Rothstein, M. C. Brittingham, L. J. Petit, and J. A. Grzybowski. 1995a. Ecology and behaviour of cowbirds and their impact on host populations. Pages 428-460 in T. E. Martin and D. M. Finch, editors. *Ecology and management of neotropical migratory birds*. Oxford University Press, New York, New York, USA.

Robinson, S. K., F. R. Thompson III, T. M. Donovan, D. R. Whitehead, and J. Faaborg. 1995b. Regional forest fragmentation and the nesting success of migratory birds. *Science* 267:1987-1990. Woodward, P. W., and J. C. Woodward. 1979. Brown-headed Cowbird parasitism on Eastern Bluebirds. *Wilson Bulletin* 91:321-322.

(Jeffrey P. Hoover can be reached at Illinois Natural History Survey, 607 East Peabody Drive, Champaign, IL, 61820. e-mail jhoover@ilnh.usf.edu.)

Update to experimental nest-box study: House Sparrow use continues to be minimal

By Barry Bermudez

An experimental nest box developed to discourage use by House Sparrows was discussed in the Summer 2001 issue of *Bluebird*. Over 10 years of nesting results were analyzed. Now, more information is available.

The key aspect of this experimental design was an enlarged entrance hole (2.75 inches diameter) which also resulted in a somewhat shallower depth of the box from the entrance hole to the floor.

Much of 2001 article was centered upon nesting success of Eastern Bluebirds utilizing the experimental boxes in a nest-box trail in Livingston County, New York, which was examined over a three-year period. The results corroborated earlier work suggesting that nest boxes with enlarged entrance holes are acceptable nest sites for Eastern Bluebirds.

The experimental nest boxes have now been located at 11 different sites over the past 16 years. Sites have ranged from suburban housing tracts (my yard) to rural croplands and pastures to marshlands with adjacent mature deciduous woodlands.

During this time frame, these boxes have been used (nest built and at least one egg laid) 249 times by five different species of birds. Eastern Bluebirds and Tree Swallows have dominated usage with 97 and 91 nestings respec-

tively. House Sparrows have nested in the experimental boxes only eight times in 16 years. Starlings have never nested in these boxes.

Although House Sparrows were observed at all locations, they have nested in boxes at only three of the 11 sites. Eastern Bluebirds on the other hand have nested successfully at eight of the 11 sites.

At three of these sites, bluebirds have nested successfully for the first time, utilizing the experimental nest boxes. No efforts were made to census House Sparrow populations at any of the sites. However, House Sparrow population density undoubtedly varied from location to location.

Additional nesting results from the past two years continue to suggest that while not 100 percent effective, nest boxes with enlarged entrance holes (2.75-inch diameter), placed at heights no greater than five feet from the entrance hole to the ground, generally will discourage House Sparrow use while providing acceptable housing for native cavity nesters.

(Barry Bermudez can be reached by e-mail at bbermude@rochester.rr.com.)

Why are bluebird eggs blue?

There is a technical answer and a romantic answer

By Megan Miller

Like so many strange and wonderful things in nature, the color of bluebird eggs is driven by genetics. Blue genes, you might say. (Or you might not. Perhaps we'd better just continue...)

A young female bluebird hatches with the ability to start producing ova. Interestingly, she only has one ovary – the left one. It is believed that the right ovary, while present, does not develop in order to save weight in flight. As the bird matures, she begins to produce the yolk that will enshroud and nourish the embryo as it ultimately incubates beneath her.

When sexually mature at about one year, the female bluebird may mate with more than one male per breeding season. The ova are fertilized and travel through the oviduct. Albumen (egg white) is added in layers, and chalazae form. Chalazae are specialized “ropes” of albumen whose function is to stabilize the egg within the shell. The shell is created last, also in layers, and during its formation glands add the familiar blue pigment. The pigment, known as biliverdin, is created from bile.

Here's where genetics step in: not all Eastern Bluebirds are capable of adding the pigment. It is estimated that as much as five percent of Eastern Bluebird eggs emerge white.

Shell color does not indicate whether or not a female chick will herself be a white-egg layer or a blue-egg layer, as white-egg layers do not regularly pass the gene anomaly to their offspring. Nor does shell color predict the birth of a white bluebird (sounds like an oxymoron, doesn't it?). White eggs and blue eggs both generally contain healthy blue birds.

Albinism does occur in bluebirds, however. One well-documented case was sighted in Maryland in 1999, although some reports say that it was not a true albino as it had dark eyes and legs. Albino birds are at special risk in the wild – they are easily seen by predators and tend to have impaired hearing and eyesight, and feathers of lesser quality.

But to return to the question, “Why are bluebird eggs blue”? Some authorities say that the blue color blends well and



The female Eastern Bluebird sitting on this nest — her tail is visible on the left side of the nest — is sitting on four eggs colored by the bird's bile. That the technical answer to the questions of why and how blue. There are more romantic answers. (Photo by Jim Williams)

helps hide the eggs in the dappled light of a nesting cavity. A seven-year-old authority of my acquaintance says they're blue because there are so few of them. Whatever the reason, blue eggs are another reason we love bluebirds.

(This article was written for Texas Blues, the newsletter of the Texas Bluebird Society. Megan Miller lives in Crawford Texas.)

Bluebirds migrate to find better weather and better resources

By Sandy Seibert

We often think of migration as a seasonal movement of birds during spring and fall to avoid harsh weather. That is only partially correct.

"Migration evolved as a way for birds to exploit resources that are seasonably abundant and avoid times when or places where resources are scarce or weather is very harsh," Dr. Paul Kerlinger wrote in his book *How Birds Migrate*.

Many birds are able to tolerate cold temperatures but if they cannot find food, they must migrate. Dr. Kerlinger goes on to write, "By far the most common type of migration, partial migration is characterized by seasonal movements away from a breeding range by some, but not all, members of a species."

Although each of the three species of bluebirds has their own migration habits, all three can be considered partial migrants.

By September, Eastern Bluebirds begin to flock. Flocks may consist of juveniles from earlier nestings or family units being made up of adults and young from the last nesting. Often, many groups will join together to form large flocks. Northern populations of eastern bluebirds will begin to move southward by the end of September or the first of October.

Eastern bluebirds do not simply shift

southward. In some of the warmer areas of the country, many are year-round residents. Often, the birds from Canada and the northern U.S. will leapfrog over areas with many resident birds in order to avoid competition for food. These birds will travel as far as Louisiana, Mississippi, Florida, and the southern portions of Alabama, Georgia, and Texas.

Not all northern bluebirds exhibit this type of migration. Some will migrate shorter distances and remain with resident birds throughout the winter. They will face more competition for food but, if they survive, they will have the benefit of being the first to return to their breeding area in the spring. This gives them the benefit of being able to claim the most desirable territories.

There is a certain percentage of Eastern Bluebirds that make no attempt to migrate south for the winter. Many researchers believe that weather has little to do with the number of nonmigrating bluebirds. They believe instead that migration has a genetic basis, with some individual birds programmed to migrate and others not.

During mild winters, more bluebirds are noticed in northern areas, but it probably just means that more have survived the milder conditions. During the coldest months, bluebirds tend to

stay in very sheltered areas where they are protected from the cold winds, snow and ice. Because they don't come out in the open as much, they aren't as visible to us.

With the lengthening of daylight in January and February, migrating Eastern Bluebirds become more active and begin their northward migration. Weather has a greater influence on the northern movement than it does with the southern movement. As the mean temperature begins to remain above freezing, bluebirds begin to appear. Consequently, Eastern Bluebirds are usually one of the first migrants to return to their breeding areas, usually returning as far north as southern Canada by early to mid-March.

Mountain Bluebirds are the most migratory of the three species. They too form into family units in late summer and merge with others to form large flocks. At this time, they may also mingle with Western Bluebirds. In September and early October, they depart for their wintering grounds. Northern birds start migrating sooner than southern birds. They will travel as far as southern Texas and central Mexico. The extent of their migration seems to be related to availability of fruit and severity of winter.

In milder areas, Mountain Bluebirds will just move to lower elevations within their breeding range. As it gets colder in the mountains, they follow the insects and berries down the moun-

**See related article
on page 20.**



This Mountain Bluebird has finished the chores of parenthood and is preparing for fall migration. Individuals gather in small flocks as migration approaches. (Photo by Myrna Pearson as published in her book Mountain Bluebird Trail Monitoring Guide, copyright Red Deer River Naturalists 2002. Used with permission.)

rain slopes and then back up the slopes in the spring.

During migration and winter, Mountain Bluebirds are found in grasslands, deserts, brushy areas, plains and lowlands. They are able to survive lower temperatures than Western Bluebirds, thus they are found in colder regions.

In northern areas, Mountain Bluebirds are considered the harbingers of spring. "There is friendly competition among many bluebirders to see who can spot the first bird of the season." Says Myrna Pearman in her book *Mountain Blue-*

bird Trail Monitoring Guide. "By mid-March, bluebirds have usually been observed even in the far northern reaches of their range."

Myrna has also noted that bluebirds start arriving two to three weeks earlier in southern British Columbia than they do in southern Alberta even though they are at a similar latitude. The difference is that British Columbia is west of the Continental Divide and enjoys a milder climate than does Alberta.

Western Bluebirds share some migra-

tion traits with Mountain Bluebirds. As stated above, in areas where their ranges overlap, they will flock together. They will also remain in their breeding range in milder areas of the west. Those that do migrate move into open scrubby forests in the foothills and canyons of the southwest.

During the winter, some of their favorite foods are the berries of junipers and mistletoe. The availability of these plants determines the birds' movement throughout the colder weather; they can become very nomadic in their search for food. Western Bluebirds consume so many berries that they are considered an important dispersal agent for the two species of plants.

All three species of bluebirds share some similar migration behaviors. They all migrate during the day and may join up with resident flocks of bluebirds to find food, water and roost sites. Fall migration seems to be determined by the shortening of daylight rather than weather. Food is still plentiful and weather conditions are still pleasant when they begin to depart. Weather can influence migration, however. Birds may linger for longer periods at foraging sites when the weather is mild. When weather turns inclement, it may cause them to move south at a faster pace.

Weather, especially the temperature, has a big influence on spring migration. As the temperature warms, insects become active, and bluebirds begin their journey northward, back to their breeding territories.

Resources:

- How Birds Migrate by Paul Kerlinger, Ph D
- Mountain Bluebird Trail Monitoring Guide by Myrna Pearman
- Eastern Bluebird, Wild Bird Guides by Gary Ritchison
- A Guide to Bird Behavior Vol. III by Donald and Lillian Stokes
- Cornell University website — <http://birds.cornell.edu>
- Ellis Bird Farm Website — www.ellisbirdfarm.ab.ca/programs.htm

Wasp problems? Soap applied to nest box ceiling can be solution

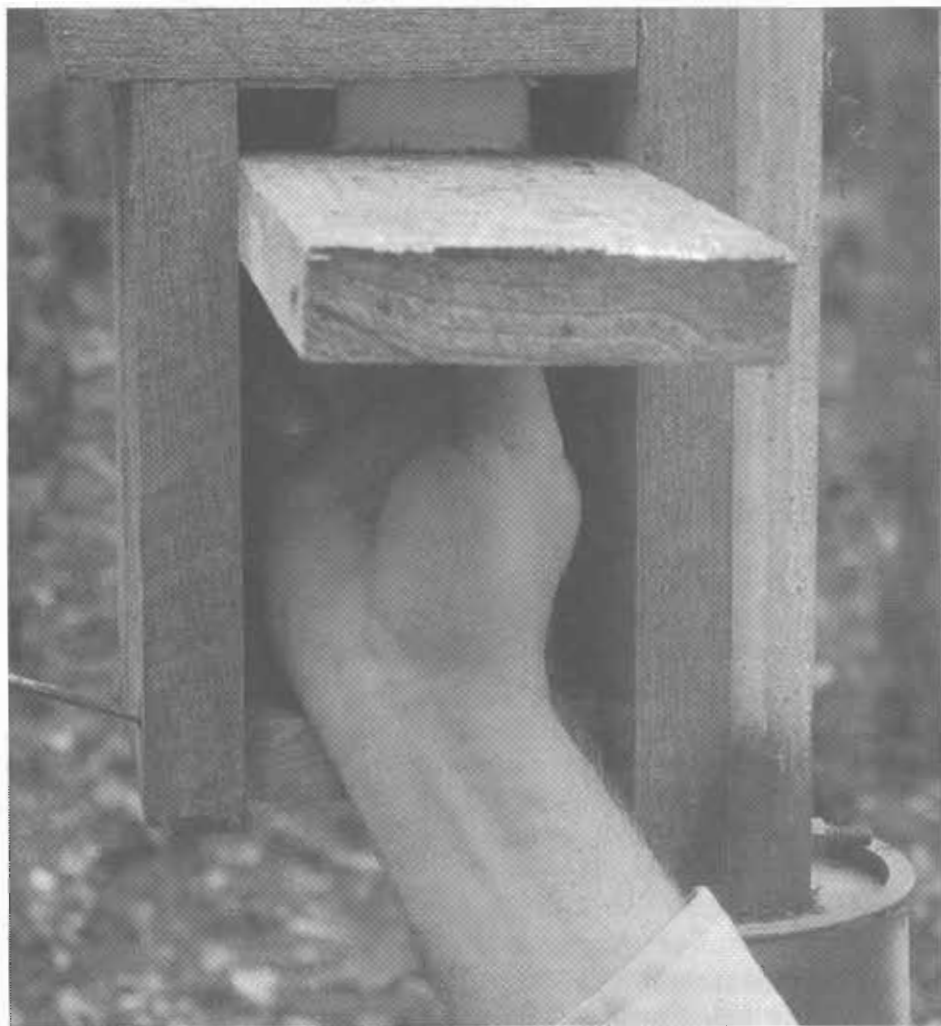
By Steve Barlow

As any experienced bluebirder can attest, wasps are one of the most troublesome nest-box invaders. I've moved my fastest when opening a nest box and finding a healthy, swarming nest of paper wasps. Working for both state and federal wildlife agencies, I've had ample opportunity for such encounters monitoring boxes for bluebirds, wood ducks, kestrels, and bats.

My latest work has involved erecting and monitoring 70 Prothonotary Warbler boxes on the Lower Suwannee National Wildlife Refuge. The refuge is located along the gulf coast of north Florida in the heart of the state's Big Bend region. Since the Prothonotary boxes needed to be placed near water, I knew wasps would be a big problem.

In the past, for Wood Duck boxes we had stapled insecticide-laden pest strips to the ceiling as a form of wasp prevention. Since the duck box is so large and the nestlings spend so little time in the box, this seemed OK. But with smaller warbler boxes housing the nestlings longer, I shied away from a chemical insecticide approach. Instead I opted to use a soap application technique in hopes this would deter the wasps with no effects on the warbler occupants.

To measure the success of the technique I decided to treat half of the boxes with the soap treatment and leave the other boxes with no type of



Soap is applied to ceiling of one of the nest boxes. (Photo by Chris Jones.)

wasp deterrent. The boxes were constructed of rough-cut cypress lumber, using the dimensions as a standard square bluebird box, with the exception of having a smaller 1-1/4-inch opening.

The boxes were numbered, and were mounted on eight-foot galvanized

channel signposts fitted with four-inch PVC predator baffles that were 24 inches deep. Boxes were erected in swampy habitats at 100-meter intervals.

The soap treatment was applied to the even numbered boxes before box placement. Common white bar soap was used for the treatments. The bar

of soap was simply rubbed vigorously to the ceiling of the treated boxes, leaving a generous white film of soap on the wood. No other portion of the interior was treated. All boxes were in place by the close of winter 2003, in time for the nesting season.

As that season got underway, it soon became obvious the wasps were avoiding the soap treated boxes while doing their best to take over the untreated ones. So remarkable was the difference, I would have unsuspecting refuge volunteers check the odd-numbered boxes while I would eagerly look into the even-numbered, treated houses! A total of 15 boxes were observed being used by wasps; 12 of those were untreated.

When wasps would decide to invade the treated boxes, they never nested from the ceiling, choosing instead to construct their nests on the sidewalls. This made for some rather unusually shaped wasps nests, as they would be attached at the side, then arched over to pendulously hang in the box. With such an arrangement, these nests never seemed to grow very large. Conversely, within the untreated boxes wasps always chose to construct their nests from the ceiling.

The birds did not seem to mind the soap treatment at all. We observed Prothonotary nesting in 13 boxes with the birds using five untreated boxes and eight treated ones. Wasps were found in only two of the boxes chosen by warblers. Our observations seemed so conclusive (I didn't get stung once!) that



Author Steve Barlow monitors a Prothonotary Warbler box. (Photo by Chris Jones.)

we have decided to forego further testing of the technique and plan to treat all boxes with soap this season.

The treatment is inexpensive, easy to do and is more environmentally friendly than pesticides. We plan to simply service all boxes every winter, applying a new coat of soap residue to the ceiling of each box. Perhaps with all of the boxes treated, refuge volunteers will suffer fewer stings this nesting season!

(Mr. Barlow can be reached by e-mail at Steve_Barlow@fws.gov.)

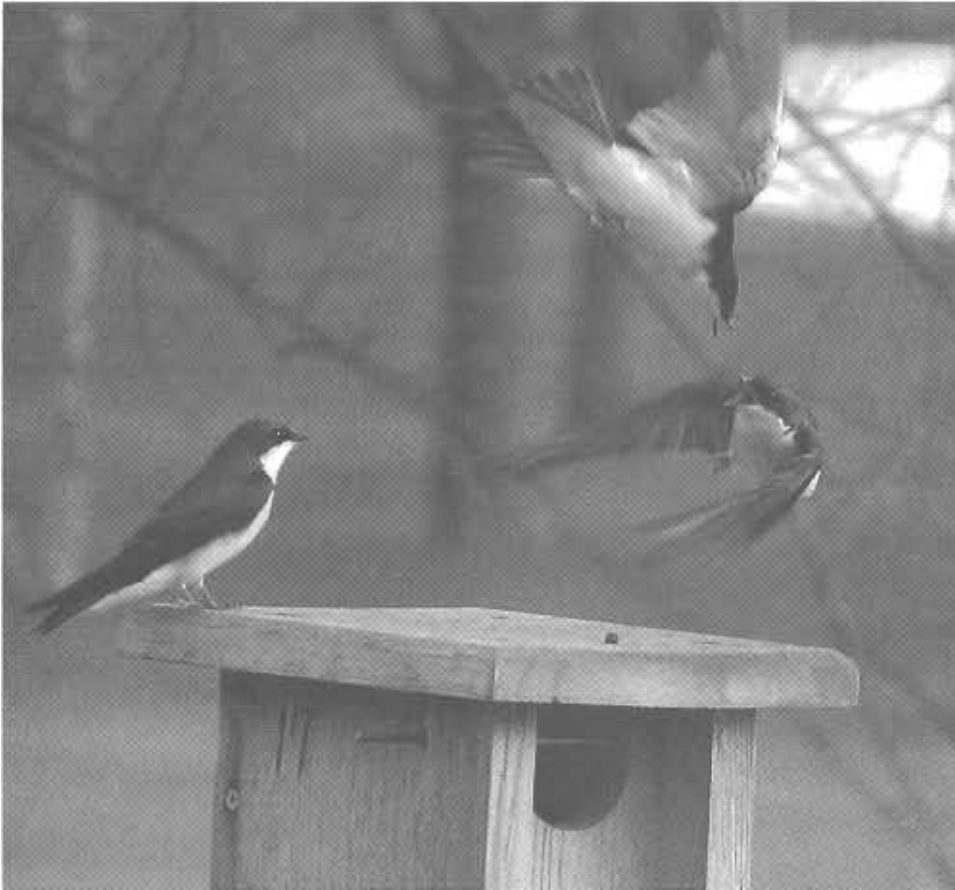
Advertise in Bluebird

Advertising space in *Bluebird* is available and productive. Our rates are reasonable, and our audience is receptive to bluebird-related products. Here is the advertising price schedule:

- **One-sixth page** — \$62.50
- **One-third page** — \$114
- **Two-thirds page** — \$194
- **Full-page ad** — \$245

Advertising scheduled for all four issues in a calendar year earns a 15 percent discount.

For more information and to schedule your advertising, contact Lisa Bulick at NABS headquarters, 330/359-5511 or send an e-mail message to lisabulick@nabluebirdsociety.org.



The full story

As anyone who has tended nest boxes in Tree Swallow territory can tell you, these little dive-bombers are aggressive birds. The photo on the cover of this issue of *Bluebird* gave you just part of the story, the action part. One male was sitting atop his chosen box with his chosen mate when the second male arrived. Battle ensued. It was brief and not decisive. The invader stayed in the area, undiscouraged. Meanwhile, the female swallow, cause of this commotion, sat calmly on the box, awaiting the victor. The picture was taken in April on a nest box trail maintained by the photographer just west of Minneapolis, Minnesota. (Photo by Jim Williams)

Cold weather? Insulation saves the day in Iowa

By **Floyd Van Ert**

This past spring, during the last of March and first of April, we had a cold spell here in Iowa — and we had bluebirds laying eggs. In the past, the eggs would freeze and end up infertile. So, I decided to make an effort to save the bluebird eggs. On Day One, I found nests with one or two eggs. I covered them in the nest in each box with a piece of 1-1/4-inch soft foam I had cut to fit tight inside the nest box. I pushed the foam down firmly (but gently) over the eggs and closed the door.

That night the temperature fell to 20 degrees. Around eight o'clock (or when the temperature had risen to at least 30) the next morning, as the sun was rising, I removed the foam. Each evening I did the same thing and each day there was another egg added to each nest box.

On Day Two, the temperature fell to 22 degrees, on Day Three to 23, and on Day Four to 25.

When I found a nest that finally had four eggs, I felt the eggs to determine if the bird was incubating yet. If the eggs were warm, I did not cover them (yes, I could tell if they were warm or cold — and I didn't break any eggs in the process). After four cold nights, I had covered six nests with a total of 30 eggs. I kept special notes on each box.

The results: All but three eggs (one egg each in three different boxes) hatched and, as of today, all the babies are doing well. I have another trail 30 miles away and was unable to cover the eggs in those boxes. I lost all the eggs on that trail during our cold snap.

Bluebird News from Shore to Shore

"We live in a rather remote area, with a fair number of birds," writes **Ray Harris from Fort McLeon, Alberta**. "I was unloading my pickup and had the driver's window open. Some time later I had to move the vehicle. I heard a small "Cheep". On the back seat was a rather distressed Black-capped Chickadee. It had its wings splayed for support. I gently removed and placed it on a tree branch. Twenty minutes later it departed.

Les Sarsfield, a Mountain Bluebird Trails director, was checking his trail this spring and found an owl upside down swaying on a barbed wire fence. Upon examination it was caught in a leg trap with the trap chain wrapped around the wire. Les released the trap. The owl flew away. Leg traps are a bane, says Ray, who submitted this item.

Terry Tellier of the Southern Interior Bluebird Trail Society (SIBTS) of British Columbia writes with several news items. During the annual Christmas Bird count in the South Okanagan of British Columbia there were more than twice the record of Western bluebirds spotted during 2003. A total of 226 were seen on the Penticton count. Although for the past five years it was usual to get some bluebirds, this year was spectacular, according to Terry.

"We do not know how bluebirds will be affected as a result of the devastating fires we experienced in BC last year," Terry says. Nest boxes may have been lost as well as natural nesting habitat. Many people were unable to complete their nest box monitoring checks due to the closures in the backcountry in September 2003 or because they were directly affected by

the fires, Terry reports.

SIBTS is contributing to three research projects focusing on cavity nesters in BC this year. It also is embarking on its first bird-banding project.

And, the society has a new web site. Check it out at www.bcbbluebirds.org.

Toni Lynn Merchen has been named Bluebirder of the Year by **Bluebirds Across Nebraska**. Ms. Merchen is Knox County coordinator for BAN. She monitors her own trail and established the Sheryl Mueller Memorial Bluebird Trail in a state recreation area.

Frederick J. S. Humphrey of Winsted, Connecticut, wrote us a long, friendly letter to reminisce about bluebirds, raptors, and checking boxes. He has built and given away hundreds of nesting boxes in northwestern Connecticut and nearby Massachusetts. He credits sportsmen with help on wildlife restoration projects. He also wrote about the different box designs he has tried, including those that mimic long hollow tree branches. "This is a great pastime," he said, "and it is a joy just to see a bluebird."

Allen Bower writes in the newsletter of the **Bluebird Recovery Program** (Minnesota) about egg dumping by Northern Flickers. Some females of that woodpecker species lay their eggs in the nest of other flickers, leaving the resident female to hatch and raise the young. He has counted as many as 16 flicker eggs in one nest.

Members of **Mountain Bluebird Trails** (MBT) took their bluebird message to a meeting of the Montana Stockgrower's Association. Over 700 cattlemen were there, and the reception of the bluebirders was good, ac-

ording to an article in the MBT newsletter. Hundreds of bluebird nest-box plans were handed out, along with MBT brochures and newsletters. Funding for the effort came from a state wildlife grant MBT received.

Rex Campbell of Silver Star, Montana, was checking his nest boxes when he found a male Mountain Bluebird pinned in a box by a Tree Swallow. The swallow was sitting on top of the bluebird in the box. Rex removed the swallow, then held the bluebird for a few moments until it flew away. He said his next project will be to design a box that indicates vacancy or no vacancy.

July 31 is next deadline for Bluebird

The deadline for the Fall 2004 issue of *Bluebird* will be July 31, 2004. Earlier submissions always are appreciated. The editor prefers to receive material by e-mail (no attachments, please) at two-jays@att.net. Postal address is Jim Williams, 345 Ferndale Road N, Wayzata, MN 55391. Include a self-addressed stamped envelope if you wish return of manuscripts or photographs. Letters to the editor are welcome. Letters may be edited for length and content.

Building and buying a better bluebird nest box

NABS has nest-box approval process

Want to buy the best nest boxes for your bluebirds and other cavity nesters? The North American Bluebird Society (NABS) has made that easier for you with its nest-box approval program.

Hundreds of retailers, manufacturers, and distributors have received NABS' approval of the nest boxes they sell or manufacture.

The nest box approval process includes an examination of the design, materials, and dimensions of the boxes to better insure that they help — not hinder — bluebirds. Hole size, thickness of wood, and ventilation are among the factors considered.

Additionally, the manufacturers and retailers are expected to help spread the word about sound bluebird conservation practices by including a NABS-created information sheet "Getting Started with Bluebirds" and NABS brochure inside the nest boxes.

Approval recognition comes in the form of a label placed on the nest box. Signs are available to retailers wishing to let customers know that such boxes are available in their stores.

How to submit bluebird nest boxes for review:

For manufacturers or retailers interested in having their nest boxes reviewed, a sample nest box and/or detailed plans can be sent to Attn.: Steve Eno 2500 West James Dr., Raymond NE 68428 (telephone 402/783-3011).

The process takes about four weeks. The company will be notified regard-

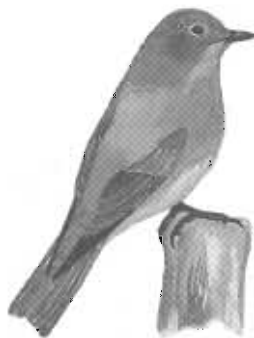
ing the decision and supporting materials will be sent upon approval. There is no cost for the nest box review, but retailers and manufacturers are expected to make a commitment to bluebird education by agreeing to insert the NABS information sheet and brochure inside each nest box.

Unless return postage is included, the submitted materials become the property of NABS.



A membership in NABS makes a wonderful

GIFT



Now buy **two gift memberships for the price of one**. For a limited time, NABS is offering two family memberships for only \$30. Send NABS the names and addresses of friends who would like to know more about bluebirds. Send your check or money order in U.S. funds (only \$30 for each pair of names) to: Two for One, NABS, P.O. Box 244, Wilmot, OH 44689. This offer is valid until July 15, 2004. Include your name and address as well so we know who is giving this wonderful and generous gift. **See gift article on page 2.**

Affiliate updates

Here is new contact information for four NABS affiliates. A complete affiliate information list appears twice a year in Bluebird. Look for this list in the Fall 2004 issue.

Colorado Bluebird Project, Audubon Society of Greater Denver, 9308 S. Wadsworth Blvd., Littleton, CO 80128
Tel: 303/973-9530. Fax: 303/973-1038.
bluebirdproject@denveraudubon.org

Benton County Bluebird Society of Tennessee, Inc., David Hayes, president, 680 Clifty Village Lane, Paris, TN 38242. Tel: 731/584-8201 day, 731/644-2541 evenings. dhayes@unimin.com

Southern Interior Bluebird Trail Society. Contact: Terry Tellier, Box 494, Oliver BC, Canada V0H 1T0. E-mail: t.tellier@shaw.ca

Ontario Eastern Bluebird Society, Marion Laing, 4381 Glancaster Rd., Mt Hope ON L0R 1W0 Canada. Tel: 905/679-3297.
www.ontarioeasternbluebirdsociety.org.
E-mail jm.laing@simpatico.ca

BLUEBIRDING SUPPLIES FROM NABS HEADQUARTERS

ITEM #	DESCRIPTION	AUTHOR/SOURCE	COST	QTY	TOTAL
B-1	The Bluebird Monitor's Guide	Griggs, Kridler, Berger	\$14.00		
B-2	Bluebird Trails - A Guide to Success	Dorene Scriven	\$12.00		
B-3	The Bluebird Book	Don & Lillian Stokes	\$12.00		
B-4	Enjoying Bluebirds More	Julie Zickefoose	\$4.00		
B-5	Mountain Bluebird Trail Monitoring Guide	Myrna Pearman	\$4.00		
V-1	Bluebird Basics Video	Don & Lillian Stokes	\$12.00		
EP1	Educational Poster & Pocket Field Guide	NABS	\$7.00		
PFG1	Pocket Field Guide	NABS	\$1.50		
EP2	Education Packet	NABS	\$6.00		
SP1	NABS Bluebird Slide Program	NABS -80 slides & script	\$55.00		
T1	Universal Sparrow Trap	Floyd Van Ert	\$11.00		
TBT1	TBT Trails Signs for Nest Boxes	NABS	\$2.00		
TOTAL ORDER					
OH Residents ONLY add 5% Sales Tax					

Shipping Information

Name					
Addresses					
City				State	ZIP
Phone				Email	
Gard Type		Number		Expiration Date	

Make check payable to: North American Bluebird Society. Mail your order and check to: North American Bluebird Society, P.O. Box 244, Wilnot, OH 44689-0244. Credit card orders can be mailed, or faxed to: 330 359-5455. You may also place credit card orders by phone Tues - Fri, 10AM - 5PM, 888 235-1331. Ohio Residents add 5% Sales Tax. All prices include free shipping. We only ship within the USA.

OTHER SOURCES OF BLUEBIRD RELATED ITEMS

In order to make bluebird nest boxes and related items available to NABS members at the lowest possible cost, we have listed the names of reliable suppliers who sell quality goods at reasonable prices. A portion of the profits from these items is donated to NABS. Please Contact these suppliers directly; **do not send these orders to NABS**. These companies do not take credit cards. Visit our website www.nabbluebirdsociety.org for photos of items listed here.

Nest Boxes, Nest Box Kits, Bluebird Feeder - from Ahlgren Construction Inc.

PRODUCT	DESCRIPTION	COST	SHIPPING	SHIP EA ADD
Peterson Nest Box - Kit Form	Solid Cedar with Hardiboard Sides	\$10.00	\$8.00	\$2.00
Peterson Nest Box Assembled	Solid Cedar with Hardiboard Sides	\$12.00	\$8.00	\$2.00
NABS Style Box - Kit Form	Solid Cedar, side opening, bottom hinged	\$10.00	\$8.00	\$2.00
NABS Style Box - Assembled	Solid Cedar, side opening, bottom hinged	\$12.00	\$8.00	\$2.00
Noel Predator Guard	Wire Cat/Coon Guard	\$2.00	\$6.00	\$0.25
Noel Guard for Peterson Boxes	Wire Cat/Coon Guard w/ Adaptor	\$3.00	\$6.00	\$0.25
Jail Style Mealworm Feeder	Solid Cedar with Dowels	\$12.00	\$7.00	\$2.00

Send check or money order to: **Ahlgren Construction Inc.** 12989 Otchipwe Ave. N., Stillwater, MN 55082. Cannot ship to a post office box, must have a street address. Cannot ship outside USA. MN residents add 6.5% sales tax. To receive these special prices, put "NABS DISCOUNT" on your order.

Gilbertson PVC and Gilwood Boxes

PRODUCT	DESCRIPTION	COST	SHIPPING	SHIP EA ADD
Gilbertson PVC Nest Box	PVC Box, Cedar Roof	\$12.00	\$7.00	\$3.00
Gilwood Nest Box - Assembled	Cedar, sealed w/ caulk	\$12.00	\$8.00	\$3.00

Send check or money order to: **Steve Gilbertson**, 35900 Dove St., Aitken, MN 56431. Cannot ship to a post office box, must have a street address. Cannot ship outside USA. MN residents - add 6.5% sales tax. To receive these special prices, put "NABS DISCOUNT" on your order.

Cedar Valley Ground Sparrow Trap

PRODUCT	DESCRIPTION	COST	SHIPPING
Repeating Sparrow Trap	Large Wood and Wire Trap	\$45.00	\$10.00

Send check or money order to: **Afton Cedar Works**, 3364 Pennington Ave. S., Afton, MN 55001. Cannot ship to a post office box. Orders must include phone number -required by Fed Ex. Cannot ship outside USA. MN residents - add 6.5% sales tax. To receive this special price, put "NABS DISCOUNT" on your order.

Join/Renew NABS Today

*an on-line membership form with payment through PayPal is available at www.nabbluebirdsociety.org
Your membership in NABS helps support bluebird conservation, research and education*

Date _____

<input type="checkbox"/> New Membership	<input type="checkbox"/> Renewal	<input type="checkbox"/> A Gift Subscription For	Name: _____
<input type="checkbox"/> 1 Year	<input type="checkbox"/> 2 Years	<input type="checkbox"/> 3 Years (\$5.00 discount)	Address: _____
<input type="checkbox"/> Adult \$20.00			City: _____
<input type="checkbox"/> Household \$30.00			State/Province: _____ Zip: _____
<input type="checkbox"/> Life \$500.00			Phone: _____
<input type="checkbox"/> Organization \$50.00			Email: _____
<input type="checkbox"/> Small Business \$50.00			
<input type="checkbox"/> Corporation \$125.00			
Additional Donation			
<input type="checkbox"/> \$30.00 <input type="checkbox"/> \$50.00 <input type="checkbox"/> Other _____			
NABS Endowment Fund			
<small>A Fund that perpetually supports the bluebird conservation efforts of NABS.</small>			
<input type="checkbox"/> \$30.00 <input type="checkbox"/> \$50.00 <input type="checkbox"/> Other _____			
<small>\$5.00 of each member's dues is designated for subscriptions to the Bluebird publication of NABS.</small>			
<input type="checkbox"/> "Friend of NABS" for current calendar year (does not include quarterly "Bluebird") \$15.00			
<small>If paid by credit card, this may be faxed to 330.359.5455</small>			
<input type="checkbox"/> Visa <input type="checkbox"/> MasterCard			
Card # _____			
Expiry: _____ Signature: _____			
<small>Payment Must be sent in U.S. funds</small> North American Bluebird Society, P.O. Box 244, Wilmot OH 44689-0244			

The North American Bluebird Society is a non-profit conservation, education, and research organization that promotes the recovery of bluebirds and other native cavity-nesting bird species.

Time to renew?

Your address label, below, contains the date your NABS membership expires. **Is it time to renew your membership?** If so, please do it today, using the form on this page. If you prefer not to cut the magazine, use a photocopy of the form or write on a sheet of paper the information requested, and send that with your payment in the envelope enclosed with this issue.



BLUEBIRD published by
North American Bluebird Society
P.O. Box 244
Wilmot, Ohio 44689
Summer 2004

Please recycle.

Non-Profit Organization
U.S. Postage Paid
Madelia, MN 55062
Permit No. 4



*****ALL FOR ADC 120
19538 10/1/04 \$5 P13
KEVIN BERNER
499 W RICHMONDVILLE RD
RICHMONDVILLE NY 12149-3003