



Bluebird

Summer
2005



Eastern Bluebird

Offering a form of calcium as a dietary supplement can improve the condition of young Tree Swallows, according to recent research. It might help bluebirds, too. See the article on page 7.

More on bluebirds and golf courses from a study conducted by researchers at

the Cornell Lab of Ornithology. A summary of the work is offered on page 10.

Beauty comes with a price for Western Bluebirds: brighter color is both a benefit and a liability. See the report on page 12.

Texas will be the site of the NABS 2006 convention. Take a peek: page 13.

Another study of bluebird color, this time finding that brighter male Eastern Bluebirds make better mates and better parents. The story is on page 17.

The trusty sparrow spooker: It's celebrating its 20th anniversary. Story and diagrams (make your own) on page 18.



North American Bluebird Society

Founder

Lawrence Zeleny

President

Steve Garr

Vice President

Anne Little

Vice President, Community Relations

Keith Kridler

Secretary

Helen Munro

Treasurer

Gary Springer

Past President

Dean Sheldon

Directors

Phillip Berry, 2006

Florida

Fawzi Ema, 2006

Maryland

Julie Kutruff, 2006

Virginia

Tena Taylor, 2006

Mississippi

Robert Benson, 2007

Massachusetts

Bernard Daniel, 2007

Ohio

JoAnn Albert, 2007

Pennsylvania

Pauline Ton, 2007

Texas

Connie Knight, 2008

North Carolina

Doug LaVasseur, 2008

Ohio

John Schuster, 2008

California

Jan Sparks, 2008

Indiana

Executive Director Emeritus

Mary D. Janetatos

From the President

By Steve Garr

Let me start by thanking the North Carolina Bluebird Society for hosting a wonderful NABS convention, and for sharing with us all of the splendor and charm Asheville has to offer!

The NABS website has a lot of information and pictures from the convention. Do take a look for great snapshots. We all had a great time!

A favorite highlight of the convention was when past board member and long time bluebirder, Erv Davis received one of NABS' most prestigious honors: the John and Nora Lane Award. Erv, who resides in Chario, Montana, has spent a lifetime dedicated to bluebird recovery and conservation. He is very deserving of this award, so please make it a point to congratulate him on this fine achievement!

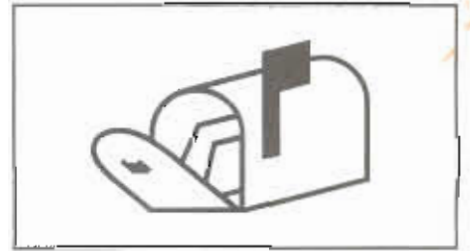
The NABS board of directors as well as some longtime bluebirders, spent several pre-convention hours in a strategic-planning session, preparing for the future of NABS. We brought much of what we discussed there to the board meeting held at the convention. Key topics were how to improve on what we have, and ways NABS can help its affiliates.

We have all seen how the three species of bluebirds have benefited from NABS' efforts. The Eastern Bluebird has seen the greatest increases in numbers, with the Mountain Bluebird also showing increases. And while we live in a time where simply not showing a decrease in population is considered an accomplishment, the Western Bluebird is not experiencing the increased population the Eastern Bluebird has achieved. Realizing there are pockets where the Western Bluebird is doing great, it is apparent that there are more locations where this species needs our help and more research.

NABS and the affiliates can work together

in the western states and provinces to promote the Western Bluebird. Recently, when a plea came in from Florida for bluebird boxes to replace those destroyed by hurricanes, NABS members and affiliates responded. Now we are asking the bluebirders and affiliates of the western areas of North America: How can we help? Let us know!

There will be other native cavity-nesters that NABS will target from time to time. We hope to educate our members and others about the great diversity, needs, and even similarities of this wonderful group of birds. All native cavity nesters deserve our support and attention. The North American Bluebird Society, as always, will be a leader in administering that support.



Trails need plan for continuity

To the editor,

There are two critical issues that have not been addressed, to my knowledge, in Bluebird.

1. The need to have a continuation plan in place in the event of death or disability of one who maintains a trail of nest boxes. Many enthusiasts maintain nest boxes in the hundreds. Also, many of these people are over age 65. What happens to their nest boxes if they are not available to monitor them? I can appreciate the need for a continuation plan because I have a progressive neurological disease which will

curtail my nest box monitoring in two or three years. I now have a continuation plan in place.

2. House Sparrows are a serious problem in the Northeast. To exacerbate the problem, many merchants are allowing these pests to nest in the light fixtures of their storefronts. When I notice this happening, I speak to the owner/manager indicating that sparrows are the greatest enemy of our native migratory songbirds. I also give them a NABS printout on sparrows. Most store owners/managers have no idea of this negative effect on our native migratory songbirds. In most cases, these nests are removed by the owner/manager once I have presented my case.

Other breeding grounds for sparrows are garden centers, such as Wal-Mart, Home Depot, and Lowe's. We should also be contacting the managers of these stores indicating the problem they are fostering.

I suggest that those of you where category number one applies, take part in addressing that issue. All of us should take part in addressing issue number two.

— *Ellsworth W. Amidon, Albany County (NY) coordinator, member New York State Bluebird Society*

About roosting boxes

To the editor,

I am devastated! Yesterday, as I was preparing my trail and boxes for the season, I found three dead bluebirds, crushed from roosting in a nest box. In all my years of maintaining my tiny trail, through trapping many a House Sparrow and chasing many a wren, I never have lost any of my bluebirds.

For years I have had an experimental roosting box located about 20 feet from one of my post popular pair of nesting boxes. The roosting box measures 16x9x10 inches with perches inside and the entrance hole at the bottom instead of near the top as in a nesting box. The entrance hole is 1.5 inches in diameter, and the box is mounted

about five feet off the ground.

I have asked many a birding expert if there is any data or trials that tell us the best place to locate a roosting box and the best way to mount it to encourage birds to use it. So far, I've been met with blank stares.

A few years ago I did plug up my nesting boxes that were close to the roosting box, trying to steer possible inhabitants in that general direction. No luck. Inside remains clear as a whistle at the end of each winter.

The roosting box entrance hole is plugged during the nesting season, as it does not have a predator guard on the entrance hole or a snake guard on the post. The low position of the entrance hole also is unsafe, and I do not want to encourage any nest building in there.

This year I did not plug up my nesting boxes during the winter. I figured that, as long as my bluebirds were not using the more comfortable roosting box, they might as well have some protection available elsewhere. Big mistake!

I know everyone is busy, but my questions remain: Where exactly is the best place to put a roosting box? The same sites as for nesting boxes? Has anyone done studies on this? Should I plug the entrance holes to my nesting boxes during the winter? Is the roosting box too big? Too small? Any feedback would be appreciated.

— *Shelly Cucugliello, 964 Willow Grove Road, Pittsgrrove, NY 08318, email scucugli@bnh.org*

(Editor's note: Share the info with us, too, and we will share it with *Bluebird* readers.)

Western Bluebirds

To the editor,

I'm a backyard birder in the west area of Western Bluebird habitat. I live in northwestern California, in the county of Sonoma, where I've had bluebirds nesting for a dozen years in my garden. I can give you some anecdotal information about

Bluebird

Published by
The North American
Bluebird Society

P.O. Box 244
Wilmot, OH 44689

330-359-5511

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

The NABS web site offers
answers to many questions.

Go to www.nabluebirdsociety.org

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 editor of the magazine.

these birds, which I hope might be of some help (in the ongoing discussion of Western Bluebird population numbers).

Development boomed during the second half of the 1990s in my area. The economy in the San Francisco Bay area was flourishing, and housing prices went up with it. People started moving further away from San Francisco to new, more-affordable homes, in the suburbs. I live now in the northern-most city in Sonoma County, and people are actually camping out to buy new homes here.

However, I lived in a new development in 1983 in the town of Sonoma (about an hour south east of here) and that is where I saw my first bluebird, so the new development didn't seem to deter them. A pair nested in my yard for the 10 years I lived in that house. Same here; we moved into a new house almost three years ago and have had a bluebird pair each summer.

We have a wet season, from October to May and then a dry season. A prolonged drought would impact the insect population, but that hasn't been a problem here for some time now. I have a pair of bluebirds with a nest and eggs right now (April), but the chicks won't hatch for another week. There seem to be plenty of insects for this first set of nestlings to eat. The past two years I've had nests of six chicks, which I never had in my former home. There usually were four or five eggs to a clutch, and I wonder if the availability of insects is a factor.

The Western Bluebirds stay here all year; they roost in the nest boxes in the winter. A very cold winter might affect them, but we seldom have hard freezes. I don't feed mealworms, but they stay anyway, and eat berries when the insect population drops off.

When I moved here in 1983, the number of domestic cats here struck me. Because of our mild winters, the cats breed year-round. I worked at the VA Medical Center in San Francisco then, and there was a colony of feral cats living there numbering

around 1,000 individuals. My neighbors at home in San Rafael all had pet cats, and generally more than one. They roamed freely.

I don't know if Californians keep more cars than people living elsewhere, but it seems that way to me. Because of the mild winters, they roam outside all year. There is an intact female living nearby who has three litters a year in the field behind my home. So, I mount my nest boxes on eight-foot sections of electrical conduit to keep them out of reach of cats. I learned the hard way!

Hope this might help you some. I'd like to reverse the current trend (of apparent population decline) here, if possible.

— *Barbara Sibio, Cloverdale, California*

On golf courses, hanging nest boxes

To the editor,

Regarding Ron Thoreson's letter to the Editor in the Spring 2005 issue of the *Bluebird*, we have had some resistance to placing bluebird houses on golf courses, but it has had to do with the added work of mowing and trimming around the posts. This is totally eliminated by hanging the houses from tree limbs.

Even in our Oklahoma winds, bluebirds and all of our other small cavity nesters are totally comfortable with this, and I believe they sense that houses hung in this manner are almost completely safe from climbing predators.

Regarding people disrupting nests, an almost foolproof method of avoiding this is to fasten house doors with a Phillips-head screw instead of a latch or removable pin. Kids and even curious adults do not walk around with a Phillips head screwdriver in their pockets!

— *Bob Walshaw, Coweta, Oklahoma*

Officers elected

Steve Gatt has been re-elected president of the North American Bluebird Society. He will lead the organization for another year. Election of officers and board members took place at the NABS convention in North Carolina in May.

Officers serving with Mr. Gatt, who is from Missouri, will be Anne Little, Virginia, vice president; Keith Kridler, Texas, vice president for community relations; Helen Munro, North Carolina, secretary; and Gary Springer, Georgia, treasurer.

Elected to three-year terms on the NABS board of directors were Connie Knight, North Carolina; Doug LeVasseur, Ohio; John Schuster, California; and Dan Sparks, Indiana.

**July 31
is next deadline
for *Bluebird***

The deadline for the Fall 2005 issue of *Bluebird* will be July 31. 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.

Changes at NABS headquarters

Lisa Bulick, executive director of the North American Bluebird Society, resigned in late April.

Ms. Bulick, who worked for NABS 14 hours per week (the executive director's position has been part-time for the past few years), deserves our thanks for her hard work on our behalf. We wish her the very best in her future endeavors.

Lisa's assistant, Rebecca Cyphert, along with board members, will take over the duties Lisa had at the office. Rebecca will continue to handle new memberships, renewals and orders every week along with the help of volunteers, just as she has been doing all along.

The bulk of what NABS is all about has always been handled by our dedicated volunteers of board and committee members, and it will continue to be so.

Messages left on the NABS telephone answering machine will be handled by NABS officers and board members. Emails sent to NABS also will be answered — bluebird questions by members of the Hotline Committee, organization and business questions by the president, treasurer, or secretary.

The NABS board has established a committee to evaluate the duties of the executive director before a replacement is made.

— *Steve Garr, president*

Photos needed

Good photos of Carolina Chickadee, Tufted Titmouse, and Carolina Wren are needed for use in bluebird presentations in Oklahoma. Bluebirder Bob Walshaw would like to add those pictures to the display he takes to his nest-box programs. If you can help, contact Mr. Walshaw at 26001 E. 118th St., Coweta, OK 74429, email walshaw1@cox.net.

Huffine, Newell, Davis, Brice Prairie honored by NABS

David Huffine, Frank Newell Jr., Erv Davis, and the Brice Prairie Conservation Association have received the NABS 2005 awards for Outstanding Contributions to Bluebird Conservation. Announcement of the honors was made at the recent NABS convention in North Carolina.

David Huffine was honored for his work in helping to compile the video footage seen in the videotape presentation entitled "Inside the Nest Box," an educational tape available from the North Carolina Bluebird Society (NCBS). Original footage was filmed with a nest camera mounted in a box on land belonging to Peter Van Duser, Clemmons, North Carolina. When Mr. Van Duser died, Mr. Huffine took the tapes and put hours of effort into the editing task. He also served as vice-president of the NCBS from 1996 to 2004.

Frank Newell Jr. was honored for leading a team of volunteers that over the years has built thousands of Eastern Bluebird nesting boxes.

Mr. Newell heads a group called Friends of Frank. These people get together to build bluebird nest boxes. They can make as many as 300 boxes a day. The boxes are sold for \$10 at locations of the North Carolina State Employees Credit Union.

Erv Davis of Chatlo, Montana, was honored for his long service to both NABS and the Mountain Bluebird Trails organization in Montana. Mr. Davis served NABS on several committees and as a board member. He was president of MBT, vice-president, and member of its board of directors. He actively supported Myrna Pearman in her work as author of the book "Mountain Bluebird Trail Monitoring Guide." He

led a group that built thousands of nest boxes to be used by MBT members. He presented bluebird programs in schools and to community organizations. He created and maintained MBT's first web site. And he monitored his own nest-box traps and banded the birds raised there, in the past 11 years banding over 25,000 bluebirds.

For all of these outstanding efforts, Mr. Davis received the NABS John and Nora Lane Award. This is not the first significant honor for Mr. Davis in the past year. He was honored in January as National Wildlife Refuge System Volunteer of the Year for 35 years of service at the National Bison Range at Moeise, Montana.

The Brice Prairie Conservation Association (BPCA), located in Wisconsin, was honored for work with bluebirds and Wood Ducks, for planting Swamp White Oak trees in Mississippi River bottomlands, for work to control Purple Looserrife, and for other conservation projects. The BPCA coordinates its bluebird efforts with the Bluebird Restoration Association of Wisconsin, fledging 3,066 bluebirds from 741 nest boxes last year. In 2000 and 2003 it was honored by the Wisconsin Conservation Congress for outstanding achievement by a conservation club.

One other award was presented at the convention. The North Carolina Bluebird Association, host of this year's annual gathering of NABS members, received a plaque recognizing its outstanding effort in organizing and hosting the event.

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 that offering calcium carbonate to nesting Tree Swallows improves condition of young birds

What nutritional supplement could you readily offer Tree Swallows that would help them produce more eggs, larger eggs, larger nestlings, and significantly more birds hatched? What supplement could allow hatchlings to grow larger sooner and have enhanced chances of survival?

The answer is — calcium.

Calcium carbonate is the single most important mineral birds require for successful reproduction. During the egg-laying period, female birds of all species require from 10 to 15 times more calcium than a pregnant mammal of the same size. Calcium is used to form the eggshell and for proper skeletal development of the young birds.

In addition, readily available calcium also allows adult birds to spend more time foraging for food for themselves and their youngsters, a factor that can result in improved overall fitness for both adults and nestlings.

Research has shown that Barn Swallows spend significantly more time looking for calcium sources than they do looking for food. When calcium can more easily be found, parent birds are able to spend more time providing nutrients for their young. This is a factor not only for Barn Swallows but for many songbird species.

Where do female birds find the calcium they need at nesting time?



As an experiment after receiving the text for this article, the editor of this magazine placed portions of calcium carbonate at each of the nest boxes he monitors, simply spooning it onto the top of the boxes. This female Eastern Bluebird and her mate were investigating nesting sites that day. She was photographed with a piece of calcium in her bill. She took three or four pieces before flying off. (Photo by Jim Williams.)

Some birds acquire this calcium from their regular diet; their food sources contain sufficient quantities of that mineral. Raptors — birds that eat mammals and other birds, creatures with bones — in particular have little problem with calcium acquisition.

Birds that eat grain, fruit, and insects, however, find little calcium in those foods. They

must get most of their calcium elsewhere, using supplemental sources. Those sources might include calcium-rich objects such as snail shells, eggshells, and grit containing this mineral.

Two recent studies by Mark T. Bidwell and Russell D. Dawson, conducted in British Columbia, show the benefits of supple-

mental calcium. One project demonstrated that Tree Swallows benefited significantly when supplemental calcium was made available to them as they prepared to nest. In the second study, a calcium supplement was fed to nestlings, with striking benefits demonstrated.

Tree Swallows were chosen for these studies because the diet of this species — flying insects — provides little calcium. (Insects found on the ground might contain more calcium, but these swallows do not forage well on the ground.)

The basis for this article is two papers by Bidwell and Dawson documenting the results of their studies, both conducted during the 2002 breeding season. One paper was published in *The Auk* (Vol. 122, No. 1, 2005), journal of the American Ornithologists' Union, the other in the *Journal of Avian Biology* (Vol. 36, No. 2, 2005). Bidwell and Dawson are in the Ecosystem Science and Management program at the University of Northern British Columbia.

Fifty-nine pairs of birds were involved in the study that provided supplemental calcium to adult nesting swallows. The study site was composed of farmlands mixed with small patches of mixed woods and some wetlands. The study birds nested in boxes mounted 10 feet (3m) above the ground on electrical poles. The boxes were located about 1,000 feet (800m) apart and from about five to 10 yards off gravel roads.

Half of the study population was provided with supplemental calcium in the form of crushed oyster shell. Oyster shell contains about 40 percent calcium carbonate. It is a common supplement for domestic poultry, and it is similar in composition to snail shells, a calcium source found in the wild and often seen in nests of Tree Swallows.

Calcium was provided in three ways: Small paper cups containing oyster shell were attached to the inside of the boxes; oyster shell was placed in feeding trays in front of the boxes; and, in addition, shell was scattered on the road edge near the

nesting boxes.

Researchers were not sure whether birds would use the calcium provided, so they decided to present it in a number of different ways.

Boxes were routinely visited during the nesting season, various measurements then taken of adult birds, eggs, and hatchlings, for both the test and the control populations.

Bidwell and Dawson collected information and statistically tested data to determine effects of calcium supplementation on clutch initiation date, egg and clutch size, total egg mass, eggshell thickness, number of eggs that hatched, number of young fledged, and body mass of the parent birds at the conclusion of the study period.

This is what they learned:

- Offering calcium to birds preparing their nests reduced the period of time between the beginning of this process and egg laying. The birds began laying eggs more quickly, perhaps because the female had to

spend less time searching for the calcium she needed to begin that task.

- Female swallows with supplemental calcium available produced larger eggs than did females in the control group (which did not receive the supplement).

- Clutch size increased as birds bred earlier in the season (as mentioned above, the calcium supplement reduced the prelaying time period, allowing earlier nesting).

- Total mass of the eggs (weight of the eggs collectively) was larger for females who had access to the oyster shell.

- Supplementation allowed birds, particularly those breeding late in the season, to hatch more eggs. Females not receiving calcium supplementation hatched fewer eggs as hatching dates grew later.

- As expected, pairs of Tree Swallows with larger broods at hatching also had larger broods 16 days after hatching. But, calcium-supplemented pairs did not have larger broods at that time than did the control pairs. This simply means that birds

Calcium and geography: Acid rain is a problem

Calcium carbonate, discussed in the accompanying article as calcium, is found naturally in the environment, in greater or lesser quantities, throughout the world. On a pH scale, it is on the alkaline side, meaning it can be neutralized by acid.

One of the problems with calcium as a natural and readily available constituent in certain landscapes in portions of North America is acid rain.

Acid rain is created when smokestack and vehicle tail-pipe emissions of sulphur dioxide and nitrogen oxides are dissolved by rainfall. The rain carries the dissolved chemicals to the ground. The acidified rain then can create problems, among them neutralizing (or elimination) of calcium carbonate.

On a scale of zero to 10, a pH level of seven is neutral, with zero indicating very acid, 14 very alkaline.

If you look at a map of North America, those areas where acidity is highest are found east of the Mississippi River, particularly through the Ohio River valley and eastward into New England, including southeastern Canada.

It is these areas where birds are most likely to encounter problems with finding adequate and readily accessible supplies of naturally occurring calcium.

that hatched more eggs also fledged more young (obviously, an expected result), but broods in the calcium group did not fledge more young than control birds.

- There was no effect of calcium supplementation on the size and weight of the female or male parents at the date of hatching. The researchers believe this confirms that the positive effects detected on egg production and number of eggs hatched were attributable to calcium supplementation, and not to the fact that calcium-supplemented birds somehow were in better condition than the control birds immediately before or during the study.

Interestingly, there was no difference in eggshell thickness between the test birds and the control population. One might expect that more calcium would produce eggshells of greater thickness. The authors explain, however, that they measured the thickness of the shells only of eggs that hatched; they did not measure the thickness of the shells of eggs that failed to hatch. They do not know if a difference existed between those two categories, if thinner shells had an influence on hatching success.

In the second study, nestlings were directly fed calcium throughout the brood-raising period to see if this addition to their diet would influence their growth and size. Pulverized oyster shell suspended in water was given to nestlings in the treatment group every other day beginning on day four post-hatching and ending on day 14. Each nestling received about 120mg of calcium during the course of the experiment.

The calcium made a positive difference. The researchers found that extra calcium allowed the nestling Tree Swallows to grow faster and be larger at age 16 days than nestlings in a control group that did not receive the extra calcium.

Dr. Dawson, one of the researchers, offered this explanation for this. "While calcium is important for egg shell formation (which is the focus of our paper in *The Auk*), it is also very important for skeletal growth in

How do parent birds know?

Dr. Dawson's article on feeding supplemental calcium to nestling Tree Swallows raises a question. If providing the needed calcium to the chicks allows the parents to spend more time feeding those chicks and less time providing calcium, how did the parent birds know that their offspring had received calcium from the researchers?

Dr. Dawson answers: "We struggled with this question during the preparation of the manuscript. In the original draft of the paper that we had submitted, we actually discussed that Tree Swallows must be able to assess the calcium needs of their offspring. The bottom line is that we do not know how (or if) parents can make such an assessment, but given the fact that calcium enhanced reproductive success, they must be able to do this."

nestlings. This is particularly true of aerial insectivores such as swallows, where their normal food contains very little calcium.

"We believe that because swallows cannot forage for food and calcium at the same time (food is caught in the air, whereas calcium supplements such as snail shells must be procured from the ground), providing calcium to nestlings allowed parents to concentrate on providing food for their nestlings, and hence enhanced their growth. So, we believe that in general, it is not the calcium per se that enhances growth (except maybe for length of tarsus, a bony structure), but rather having excess calcium allows parents to provide more food, and hence energy, to growing young," he said.

Faster growth and larger size is important to nestlings, the researchers said, because it could allow nestlings to fledge sooner. This would reduce the amount of time the young birds are vulnerable to nest predation. Better fitness at the time of fledging also can influence the birds' survival as adults.

The second study was conducted in an area and manner similar to the first research project discussed here.

The question of the day might now be: would additional calcium availability have

the same positive effects on bluebirds?

Asked that question, Dr. Dawson offered this answer: "As far as the general benefits of extra calcium for species such as bluebirds, I think it would have less of an effect. Nonetheless, I think in areas where there is little calcium (areas impacted by acid rain, or areas that are naturally base poor), supplementing oyster shell may indeed be beneficial to bluebirds.

"Our results also show that for birds such as Tree Swallows (and presumably other aerial insectivores), calcium can be beneficial even in areas where levels of calcium are relatively high."

(Dr. Russ Dawson, Ecosystem Science and Management (Biology), University of Northern British Columbia, 3333 University Way, Prince George BC V2N 4Z9 Canada; 250/960-6068; Fax: 250/960-5845; email dawsonr@unbc.ca; <http://web.unbc.ca/~dawsonr>.)

(This article was prepared by Jim Williams, editor of Bluebird, with the permission of the authors of the original papers. The authors, Bidwell and Dawson, reviewed this text and offered helpful comments and suggestions. Additional review and comment was offered by Bernie Daniel, chair of the NABS research committee. We thank them all.)

Bluebirds and golf courses: Part two

More information is available on bluebirds and Tree Swallows nesting on golf-course habitat. Preliminary results from this study, conducted by the Cornell Lab of Ornithology (CLO), show that pesticides used on golf courses seem to have little overall impact on nesting birds.

The preliminary look at this study was published in the Spring 2005 issue of BirdScope, newsletter of the CLO. The article was written by Tina Phillips and Caren B. Cooper. The study began in 2001 and concluded in 2004. It involved more than 400 nest-box monitors who provided information on pesticides used within 100 feet of nesting boxes.

Data from habitats with and without pesticides were compared. It was expected that birds nesting in areas where pesticides were used would show poorer nesting success.

“However,” the authors wrote, “analysis of all reported habitats, including golf courses, indicates no significant differences in clutch size, brood size, or number of fledglings of Tree Swallows and Eastern Bluebirds nesting in areas with and without pesticides.”

The study found that both fledge and hatch rates were slightly higher on golf courses when compared with three other habitat types — agricultural areas, parks and fields, and residential areas. Habitat, however, is an important variable, the authors said.

And the fact that golf course habitat produced higher fledge and hatch rates the authors wrote, indicate “that the large variation arising from differences in habitat may override the smaller variation potentially created by pesticide application.”

In other words, pesticides might be having a negative impact, but the positive impact of golf-course habitat could more than make up for any pesticide-based losses.

What is so attractive about golf-course habitat? Well, insects might be more easily found on the short golfing grass. And reduction of predators might be a factor.

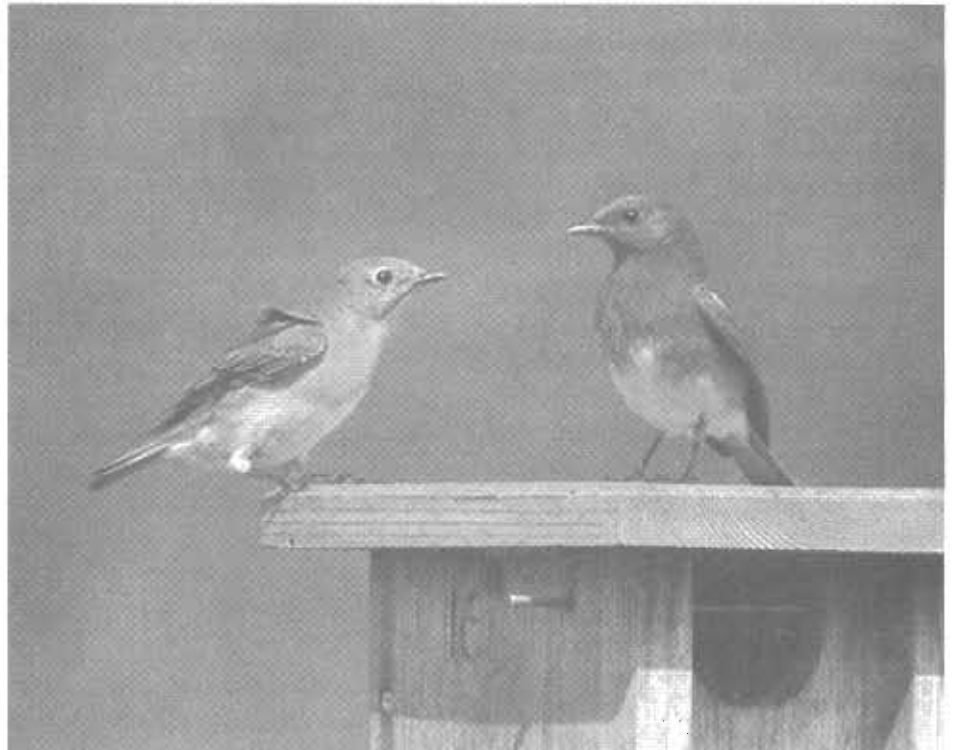
Study participants reported that 80 percent of their nest boxes placed on golf courses had predator guards. This compares with from 50 to 60 percent of boxes with predator guards in other habitats. And all boxes with predator guards in this study fledged more young than boxes without guards.

The authors caution bluebirders who are thinking of using golf courses as nest-box placement sites. Familiarize yourself with the golf course environment, they wrote, beginning with the course superintendent. Place boxes and monitor in a way that minimizes interference with golfers. And understand, they wrote, that many

questions about golf courses as suitable habitat for cavity-nesting birds remain unanswered. For instance, what is the survivorship rate for birds fledged on golf courses as compared with birds fledged in other habitats?

Expect to hear more about this subject. “As urbanization continues to expand into once-natural areas, wildlife will by necessity have to make use of managed areas such as golf courses,” Ms. Phillips and Ms. Cooper wrote.

(The Winter 2005 issue of Bluebird contained another article about bluebirds and golf courses, examining research work by Dan Cristol at the College of William and Mary in Virginia and by Mark Stanback at Davidson College in North Carolina.)



This pair of Eastern Bluebirds was investigating a nest box on a golf course west of Minneapolis, Minnesota. (Photo by Jim Williams.)

Parasites: fighting dirty

A simple and non-toxic means of reducing the number of parasites found in Tree Swallow nests has been suggested in a research paper published in the Summer 2004 issue of the *Journal of Field Ornithology*. It involves use of diatomaceous earth.

Diatomaceous earth consists of fossilized diatoms, and is made up of almost pure silicon dioxide (also known as silica, the most common constituent of sand). This substance is stable. It produces no toxic residues, and it has been used safely as a feed supplement to clear intestinal parasites from cattle. It also is used in some water purification systems.

This substance is presumed to also be safe for use with birds, according to the author of the paper, Dr. Russell D. Dawson of the University of Northern British Columbia.

Diatomaceous earth kills parasites by abrading their outer body surface or by absorbing fats or lipids from their bodies. In either case, water loss results, killing the insect.

This study focused on blowflies and fleas. The author worked with Tree Swallows nesting in nest boxes; approximately 190 boxes were used in the study.

Nests were treated twice each year, once during incubation and again when the chicks were about one-third grown. The diatomaceous earth used in the study was contained in two commercial insecticides. In the first year (2001) of this two-year project, the product, used during incubation, was Drione Crawling Insect Killer (Wilson Laboratories, Dundas, Ontario). It contained 38.19 percent diatomaceous earth, as well as 0.2 percent pyrethrins and 1 percent piperonyl butoxide. Pyrethrins are insecticides made from the flowers of chrysanthemum; they have low toxicity for birds and mammals. Piperonyl butoxide is used as a synergist, to facilitate the action of the other ingredients.

In the second year of the study, the product used, again during incubation, was Insectigone earwig killer (Chemfree Environment, Inc., Kirkland, Quebec). It contains 80 percent silicon dioxide.

Insectigone was the product used both years to dust nests after eggs hatched.

"My results showed that diatomaceous earth is an effective treatment that reduces populations of fleas and (certain species of blowflies) in nests of Tree Swallows," Dr. Dawson wrote in his paper. He added that fleas seemed more affected than blowflies. The diatomaceous earth did not completely rid nests of either insect.

Dr. Dawson explained that it is "probably

undesirable to completely eliminate all parasites from nests ..." Doing so, he says, would inadvertently remove an important selective pressure on the birds. In other words, weak birds that might die when infested with the fleas or blow flies would be allowed to survive, allowing those weaker genes to enter the breeding pool.

He also cautions that diatomaceous earth can be detrimental if applied directly to the birds. It seems to remove the feather oil necessary to keep the birds dry. He urged persons using the product on nesting birds to be cautious in application. Users always should read and understand instructions and cautions found on package labels.

**NORTH AMERICAN
BLUEBIRD SOCIETY
CONVENTION**

REGISTRATION OPENS SEPTEMBER 1ST

**APRIL 26 - 30, 2006
SAN ANTONIO, AIRPORT HILTON**

Red, White & Bluebirds
NABS 2006

WWW.NABS2006.COM

Plumage coloration and mortality in Western Bluebirds

The high cost of beauty

The beautiful and brilliant plumage of Western Bluebirds is one of the primary reasons we enjoy watching them. But could the physiological costs of producing beautiful plumage cause males to be susceptible to sickness and death? A recent scientific study by ornithologists Amber Keyser (University of Georgia) and Lynn Siefferman (Auburn University) addressed this question.

The answer appears to be, yes. They found that male Western Bluebirds with darker, redder breasts were more likely to die during an outbreak of disease than were less-ornamented males.

The Prescott Bluebird Recovery Project (PBRP) has been monitoring a breeding population of Western Bluebirds in the Willamette Valley region of northwestern Oregon since 1975. These hard-working volunteers monitor nearly 1,800 nest boxes each year. With such intensive monitoring, it is normal for volunteers to occasionally find dead adult bluebirds in or near nest boxes.

However, in 2001, 53 dead adults were recovered, more than in any prior year in this population and far more than in other large bluebird projects in North America.

Keyser and Siefferman knew that it was very unusual for scientists to find large numbers of dead animals in the wild. Predation is an isolated, rarely witnessed event, and it is even more uncommon to document death of large numbers of individuals from illness or starvation.

Keyser and Siefferman decided to investigate the cause of such high mortality, and to determine which birds were most likely to die. During the following breeding season, Keyser and her volunteers checked boxes and collected dead adults from in and near nest boxes.

They found 94 dead adult bluebirds between April and July 2002, nearly twice as many as in 2001 and representing nearly 22 percent of adults breeding in PBRP nest boxes.

Keyser performed necropsies (animal autopsies) on all recently dead bluebirds to determine cause of death. Most birds had obviously fed within the 12 hours prior to death, and none were emaciated. Thus, Keyser concluded that they did not die of starvation.

Instead, most birds showed massive hemorrhage of the internal organs suggesting that the birds died from a bacterial infection. She also found a high incidence (55 percent) of a gut parasite called a thorny-headed worm (*Plagiorhynchus cylindraceus*). This parasite, about the size of a grain of rice when full grown, burrows its thorny head into the intestinal wall of the bird. It is likely that the birds died from secondary infection in the wound caused by the parasite.

Bluebirds become infected with the parasite when they consume isopods (often called sow bugs or roly-poly bugs), which are the intermediate host of the thorny-headed worm.

Next, Keyser and Siefferman wanted to know if certain birds were more likely than others to succumb to bacterial infection. To compare body measurements and plumage coloration of the dead birds against a random sampling of live birds, they trapped healthy adults in Potter live traps baited with mealworms, measured morphology and plumage coloration of breeding adults, and immediately released the birds.

When Keyser and Siefferman compared the body measurements and coloration of the birds that died with the birds that survived, they found that dead males had significantly darker, redder breast patches than males that had survived the epidemic. Dead and surviving males did not differ in blue plumage coloration.

Females (which have duller breast coloration than males) were slightly less likely to die than males, but otherwise, dead and surviving females did not differ in coloration or body size.

Why might the most colorful male Western Bluebirds be more susceptible to parasitism and death? The pigment melanin is responsible for the dark red coloration on the breasts of Western Bluebirds. Evidence from other species of birds suggests that dark melanin plumage functions as a badge of status when males compete over nest sites.

So, male bluebirds with darker plumage may be better able to win male-male contests over nest boxes. However, males

need high levels of testosterone to produce this darker plumage, and high levels of testosterone can compromise the immune system.

Keyser and Siefferman propose that there are costs to producing dark plumage coloration. These costs require individual Western Bluebirds to gamble on future survival when allocating resources of their bodies to brighter plumage.

During normal years, males that have high levels of testosterone are probably better off because they are more successful in male-male contests; they are more apt to win breeding competitions. But the epidemic of 2001-2002 represented an unpredictable, and perhaps infrequent, challenge to breeding males. In the case of the males in this study, the most highly ornamented individuals lost the bet and were less well prepared to fight off disease.

All of us who have watched bluebirds have noticed that some individuals are more beautifully colored than others. This study provides insight into this phenomenon. Not only can beauty be costly, but beauty is also more than just feather-deep.

(This article is based on a scientific paper entitled, "Viability Selection Against Highly Ornamented Males," published by Drs. Keyser and Siefferman in the journal *Evolutionary Ecology Research* (2005, vol. 7, pgs. 1-12). The authors can be reached by email at keyser@vancouver.wsu.edu and siefflm@auburn.edu.)



For another story about bluebirds and their colors, turn to page 17.

Texas

2006 NABS convention in San Antonio in April

By Mary Leyendecker

Approximately 15 percent of the attendees at the NABS 2005 Convention in Asheville, North Carolina, are already set for the 2006 get-together. Reports are they phoned for lodging reservations at the San Antonio Hilton, the host hotel for the 2006 North American Bluebird Society Convention, before they left for home.

Lodging reservations for the April 26 - 30, 2006 convention couldn't be easier for early birds: just dial 1.800.HILTONS or visit www.hiltonsanantonioap.com. The convention code for the \$89 (plus tax) room rate is "NABS". (Early lodging reservations help secure needed meeting space for the convention.)

Texas Bluebird Society (TBS) president and founder Pauline Tom wowed the 2005 NABS crowd in Asheville when she launched a Texas-sized "Red, White & Bluebirds" presentation.

Colorful convention plans were announced, including a flag ceremony. One person from each state and province represented in the NABS organization is cordially invited to provide a 3'x5' flag of their state or province for opening ceremonies next April in the headquarters hotel. To secure flag rights for your state/province, e-mail flags@NABS2006.com or contact Pauline at 512/268-5678.

TBS issued a call for presenters, asking NABS members and associates to share expertise and deliver practical and educational information at next year's convention. To submit a presentation proposal, send an email to program@NABS2006.com.

Already confirmed are June Osborne and Gary McCracken, two avian experts/authors with well-earned international reputations for excellence as keynote speakers.

Field trips to world-famous bat caves in Central Texas and key birding locales in and near San Antonio are planned.

Donations are being accepted for the silent auction, auction, and door prizes. Contact auctions@NABS2006.com or Mindy Mitchell, 817/444-7344.

Sponsors may send an email to sponsors@NABS2006.com or call Pauline Tom, 512/268-5678.

Complete information on the 2006 NABS convention is posted at www.NABS2006.com. Convention registration officially opens Sept. 1, 2005.

**The kestrel,
a formidable
predator, is
hunted as
well as hunter.
Cooper's Hawks
prey on this
species in
woodlands.**



American Kestrel

By Dan Ardia

By any consideration of the tools necessary to survive in a harsh world, American Kestrels are tough birds. Each strong foot is equipped with razor-sharp talons. The curved bill is notched with a small tooth (called the tomial tooth), used to sever nerve endings in their prey. Over the years watching and studying kestrels, I have seen these cavity-nesters catch and kill prey such as mice, lizards, snakes, and birds, including beasts almost as large as themselves. You might expect that kestrels should be safe from harm and would sit with the self-confidence of larger birds of prey like Red-tailed Hawks. But you would be wrong.

It turns out that even fierce predators sometimes suffer predation. About 10 years ago, Keith Bildstein, Acopian Director of Conservation Science at Hawk Mountain Sanctuary in Pennsylvania, began placing radio transmitters on kestrels in the winter to follow their movements. On many occasions, he found that the radio

signal had become stationary. Further searching revealed the transmitter 100 yards or so into the woods, often in a pile of feathers and bones. The unfortunate kestrels appeared to have been captured and eaten by Cooper's Hawks, a medium-sized bird-eating hawk that hunts along woodland edges.

These observations spurred us to think about whether predation by Cooper's Hawks might be having an effect on American Kestrel populations. First, we had to consider the recent history of the Cooper's Hawk, as this species has had rough treatment at the hands of humans.

For decades, Cooper's Hawks were shot in large numbers, either on farms (due to the belief that they eat chickens) or along migration routes (such concentrated hunting spurred the creation of Hawk Mountain Sanctuary). But even after hunting pressures eased, Cooper's Hawk was affected by use of the pesticide DDT.

DDT, as many of us remember, disrupted

calcium deposition in birds, leading to thin eggshells. The effect of DDT almost caused some species such as Bald Eagles to go extinct. Cooper's Hawks were exposed because they prey on bird species, such as robins, that were eating insects contaminated with DDT. The hawks, in their position at the top of the food chain, were accumulating high levels of DDT. Thus, until DDT was banned in 1971, Cooper's Hawks were scarce in the landscape.

American Kestrels weren't affected by this double whammy of trouble as their smaller size minimized hunting pressure and their penchant for mammalian prey allowed them to escape DDT.

The difference in population history between the two species was something like a natural experiment that occurred across North America over the last 100 years. Keith and I, along with Mark Miller, a statistician and biologist, decided to take advantage of this situation to investigate the relationship between the two species.

We reasoned that if Cooper's Hawks are indeed an important source of mortality for kestrels, then increases in Cooper's Hawk populations should lead to decreases in American Kestrel populations. If we could compare how American Kestrel populations changed over the period of time that Cooper's Hawk populations recovered we might be able to see the effect.

We used data from Christmas Bird Counts, organized efforts by local volunteers to census birds over the Christmas period sponsored by the National Audubon Society. These counts have been conducted for 104 years; we obtained data from across the eastern US for a 20-year period from 1978 to 1998.

Because we wanted to examine trends in places where both birds were abundant, we analyzed only those count locations where both species had been observed for 15 of the 20 years. We directly compared the change in each species within each count location. It was important to compare the changes within each count circle or else it would be difficult to argue that Cooper's Hawks had any direct effect. We were looking for locations where an increase in the number of Cooper's Hawks was occurring at the same time as a decrease in American Kestrels.

Interestingly, we found strong support for our argument. In 40 percent of the almost 200 count locations we analyzed, we found a link between Cooper's Hawk and American Kestrel populations: as Cooper's Hawks increased, American Kestrels decreased.

The relationship was the strongest in Connecticut (93 percent of locations showed a link), Massachusetts (75 percent) and New Jersey (68 percent). This wasn't direct proof, as only an experiment would be truly convincing. However, it was persuasive evidence that was consistent with our research predictions.

However, we also knew that land use was changing over the same time period. Across much of the northeastern U.S., farmland

is being converted to homes or reverting to forest. Increasing woodlands benefit Cooper's Hawks and decreasing farmland hurts kestrels. Thus it was possible that land use changes alone could be affecting each bird species independently and giving the appearance of a link that was not real.

So, we obtained data from the US Department of Agriculture and compared changes in three measures of land use: (1) the number of small farms, (2) the area of pasture (a preferred habitat by kestrels) and (3) human population density. We found that some of the land use measures were related to the population changes of Cooper's Hawks and American Kestrels. But the link was not strong enough to explain the strong relationship we found.

We are particularly happy with our findings because they help us better understand many aspects of the behavior and ecology of American Kestrels. For example, previous work I conducted as a Master's student at SUNY-Syracuse showed that female kestrels, larger than the male birds, appear able to force male kestrels to use more wooded areas during the winter. This change brings male kestrels into greater contact with Cooper's Hawks along woodland edges and thus increases their predation risk.

Accordingly, male kestrels appear to behave differently in wooded areas in order to minimize their risk. They tend to hunt prey that requires less handling time, as handling prey is a particularly risky behavior. They also spend less time hover hunting, which helps reduce their conspicuousness. In addition, high predation pressure may explain why both male and female kestrels have "false eyes" on the back of their head. These small dark patches of black may look like eyes at a distance and thus give a predator the false impression that the kestrel is looking its way.

Our results fit in with a larger body of evidence that suggests that predators eating other predators can be an important force in nature. For example, in Africa hyenas

often eat many smaller species of predators, such as wild dogs and jackals, and many species of smaller owls suffer predation from larger owl species. This all suggests that the ecology and behavior of predators is as strongly influenced by predation as the behavior of their own prey.

(Dan Ardia is with the Department of Ecology and Evolutionary Biology at Cornell University, Ithaca, NY.)



Photos by Jim Williams

Research Review

Fatter is better

For birds, fatter seems to be better.

A study done in Europe weighed the bodies of birds that had been killed by predators. These weights were compared with weights taken from birds of the same species captured for banding.

For the most part, the birds killed by predators (cats and raptors) fell within the lightest 20 percent of the weight measurements by species.

The researchers concluded that birds of lighter weight were foraging for food more intensely, thus paying less attention to threats. They also were foraging in habitats that exposed them to more danger, the drive for food overriding usual cautions.

Being heavier might slow escape times slightly, the study said, but it is more dangerous to be skinny.

Woodpeckers and fungi: Help yourself

Woodpeckers might be helping themselves to easier nest-hole digging by spreading decay-causing fungi from tree to tree. And, woodpeckers in British Columbia heavily favor quaking aspen when choosing a tree for excavation.

These are two findings from a series of papers on various aspects of woodpecker behavior and the birds' relationship with their environment published last year in *The Condor*, an international journal of avian biology.

Ornithologists have long known of relationships between rotted wood and woodpecker-nest and roost holes. They also have written about the relationship of certain species of fungi and these birds. Red-cock-

aded Woodpeckers, for example, are linked with red heart fungus, which attacks the pines this species favors. Wood softened by fungi-created decay is easier for the bird to remove. (Red-cockaded Woodpeckers will excavate in healthy wood, however.)

It has been assumed that the woodpeckers either depend upon or show a preference for partially decayed wood when they seek an excavation site. Study shows that this appears to be true, generally speaking. Some decay seems necessary if the bird is to successfully create a cavity.

Researchers also speculate that the woodpeckers assist themselves by carrying fungus spores from tree to tree on their bills, thus spreading the fungi. This is an unintentional act, the scientists say. But it would help ensure that the birds will in the future find trees suitable for cavity excavation.

A study in British Columbia found that quaking aspen was by far the tree species of choice for cavity excavation, and that Northern Flickers, in that particular area, were the bird species doing most of the work.

While quaking aspen accounted for only 15 percent of the trees in the study area, 95 percent of the 1,692 cavities found were in aspen. A full range of live and dead trees was used by birds for cavity excavation, but 45 percent of the cavities were found in trees with decay and another 45 percent in dead trees, according to the researchers.

The first fungus paper was written by Dr. Jerome A. Jackson and Dr. Bette J. S. Jackson. The British Columbia study was authored by Drs. Kathy Martin, Kathryn E. H. Aitken, and Karen L. Wiebe.

Bluebirds and snakes: turning the table

Snakes eat bluebirds. It's hardly ever the other way around.

Bluebirds turned the table in Texas, though, during the 2003 breeding season. A small, dead Flat-headed Snake was found in an Eastern Bluebird nest box. The discovery was made by researchers Shelby C. Braman and Darrell W. Pogue, who were monitoring nest boxes at Tyler State Park, north of the town of Tyler.

This species of snake is described as a small, docile, burrowing reptile that preys upon a variety of invertebrates, such as centipedes and soft-bodied insect larvae. Because of its size and habits, Braman and Pogue felt it unlikely that the snake crawled up the mounting post and into the nest box.

They believe the snake was captured by an adult bluebird and taken to the nestlings. Because the snake is quite small (eight inches long or less), Braman and Pogue speculate that the bird might have mistaken the snake for a large insect larvae. The young birds did not eat the snake, perhaps because they were very near fledging.

While Eastern Bluebirds for the most part feed on insects and berries, there are records of this species occasionally preying on shrews, skinks, and other snake species.

The researchers wrote about this event in the March 2005 issue of *The Wilson Bulletin*, published by the Wilson Ornithological Society.

Brighter male bluebird means better mate, better parent

The intensity of color in Eastern Bluebirds also was the subject of recent study, although mortality was not the driving factor in these projects. Research has shown that both brighter blue and brighter chestnut colors indicate male birds better at attracting mates, caring for young, and perhaps better at prevailing in competition with other males. Another project examined the physics of brighter color and suggested that research be undertaken to determine if brighter color comes with a price.

Male Eastern Bluebirds have two types of ornamental plumage coloration: their brilliant blue head, back, and wings, and a patch of chestnut breast feathers. If an individual bluebird has brighter colors, does that mean anything?

The research team tested the hypothesis that plumage coloration reflects quality in male Eastern Bluebirds. It investigated whether male ornamentation correlates with quality of the male as a mate and his skills as a parent. The researchers studied the size of the patch of chestnut breast feathers, the brightness of those feathers, and the brightness of the blue feathers.

They found that males with larger breast patches and brighter plumage brought food to nestlings more often, fledged heavier offspring, and paired with females that nested earlier. Males with brighter plumage also fledged more offspring.

These results suggest that plumage coloration is a reliable indicator of male mate quality and reproductive success. Both the chestnut and blue plumages appear to be real signals of male quality and parental skills. These are signals that can be assessed by competitors or by potential mates, ac-

ording to the study.

Incidentally, the two colors of Eastern Bluebirds are created in different ways. The blue coloration is produced from feather microstructure, whereas the chestnut coloration is produced by a combination of two pigments deposited in feathers.

This study was conducted by Lynn Siefferman and Geoffrey E. Hill of the Department of Biological Sciences at Auburn University. It was published in the journal *Behavioral Ecology* in 2003.

A second study by the same two researchers revisited the blue brightness question again, and suggests that the degree of blue plumage of male Eastern Bluebirds is a measure of how well they compete for nesting cavities.

Bluebirds cannot excavate their own nest cavities, and as a consequence of limited nest sites, often engage in intense competition for nest boxes. The researchers experimentally tested the hypothesis that the intensity of blue coloration reflects male competitive ability.

This was done by manipulating the number of available nest boxes. A limited number of nest boxes were put in place in early spring. After birds had established residency in those nest boxes, more nest boxes were added to the study site.

The researchers found that the reflective properties of the blue plumage differed between males that acquired nest boxes early versus late in the spring. The more colorful birds won the competitions for access to nest sites.

“These observations support the hypothesis that plumage color is a ... trait in male Eastern Bluebirds that could be used to

accurately assess the fighting ability of competitors,” the researchers wrote in their report. They also said that the color of the birds was dependent upon the physical condition of the birds. Healthier, more fit birds have brighter color.

This report was published in the journal *Animal Behavior* in 2005.

A third study has determined that the brighter blue found on some Eastern Bluebird individuals is caused by a particularly precise arrangement of feather structure at a molecular level. Tight and orderly arrangement of these nano-sized feather constituents create more intense color. The question yet to be answered is whether or not the bird pays a price for its more intense color. Does bright color, a plus when mates are being chosen, require additional energy to produce? What cost might the bird pay when it diverts energy to color instead of some other use?

This study was conducted by Matthew D. Shawkey, Anne M. Estes, Lynn M. Siefferman, and Geoffrey E. Hill. It was published by The Royal Society, London, in 2003.

A 20th anniversary update

The trusty sparrow spooker

By E.A. Zimmerman

Many bluebird enthusiasts have learned the hard way that House Sparrows are aggressive competitors. House Sparrows often evict native birds from nest boxes, and may break or remove eggs, and kill both nestlings and adults.

To date, no truly sparrow-proof bluebird nest box has been designed, since the smaller House Sparrows can enter any hole a bluebird can fit through. Some nest box styles may not be preferred by House Sparrows, but may still be used, or entered for the purposes of attack.

There are a number of passive and active House Sparrows control methods, ranging from hanging fishing line from boxes, to removal of nests and eggs, to trapping or shooting. Because House Sparrows are non-native birds, federal law allows removal and destruction of their nests, eggs, young and adults. However, passive control methods are more acceptable to many people. Unfortunately, they are also limited in their effectiveness. There is one exception: the sparrow spooker.

It appears that sparrow spookers are virtually 100 percent successful in deterring House Sparrows from entering a nest box, while enabling bluebirds to use the box. Creative bluebirders have come up with a number of designs, but almost all sparrow spookers use material that flutters over the roof, towards the front of the box. For some reason, this "spooks" House Sparrows. It does not discourage bluebirds from entering the box once they have started laying. In fact, in my experience bluebirds will often perch on the spooker.

The sparrow spooker is installed on the nest box immediately after the first egg is laid. It is removed immediately after

fledging, to encourage another brood, and to avoid House Sparrows becoming accustomed to it.

I first learned of the sparrow spooker from Gwen Newton-Denton's webpage at <http://members.tripod.com/%7Eherper/mbahospdeter>. It indicates that Lillian Lund Files, past president of NABS, published a drawing in 1985 of this technique to repel House Sparrows. Since then, many bluebirders have enjoyed favorable results with this clever, yet simple and inexpensive device.

To construct a typical sparrow spooker, you will need:

- A vertical post (e.g., a one-by-one-inch stick of wood, dowel, yardstick, piece of black plumbing hose, or plastic pipe) about a foot long.
- One or two horizontal extensions that will be parallel with the roof in a T, horizontal V or upside-down L shape relative to the vertical post. The horizontal piece should be long enough to extend to the edge of the roof.
- About three to six strips of flexible, reflective material. Mylar (cut from party banners available at party supply or department stores works well. Mylar from balloons tends to curl up. In a pinch, strips cut from a potato-chip bag made of foil will suffice. Aluminum foil does not work as well, since it does not flutter much and tends to come off.

The strips can be attached to the horizontal extension with a glue gun, duct tape, staples, or pulled through a hole and knotted. Use a method that will endure sun, wind and rain for about six or seven weeks (the typical time period from egg laying to fledging).

Finally, you need a way to affix the spooker

to the nest box (e.g., a screw, cable tie, hose clamp or duct tape.)

This need not be a complicated project. I recently made an emergency sparrow spooker in a couple of minutes out of a foil popcorn bag, coffee stirrers, duct tape and two tree branches.

Position the spooker so the horizontal extension(s) are about eight inches above the roof. The strips should fall above the roof (as opposed to extending beyond it over the entrance hole), barely brushing it, so they will move freely in the wind. If the strips are too long, they may not hold up under windy conditions.

I have yet to hear of a case where a bluebird male or female failed to tolerate a sparrow spooker. They may appear fearful initially, but will usually perch on or enter the box within minutes. Occasionally, it may take



Temporary sparrow spooker. Stick in the center attaches to the back of the box. To it are attached the braces from which the "spookers" hang. The drawing on the facing page gives more detail.

up to an hour or two.

Putting the spooker up after the first egg is laid ensures that the birds are committed to the nest site. You will also have confirmation of acceptance as long as a new egg is laid the next day, and will not have to worry about interrupting incubation. Avoid installing the spooker when it is very windy, as this may delay acceptance.

Little information is available about acceptance of sparrow spookers by other cavity-nesters, or at the pre-egg laying stage.

A few people have successfully used sparrow spookers with Tree Swallows. Since titmice and chickadees may be more sensitive to nest site disturbance, a hole restrictor (smaller than 1.25") may be a better choice to protect them from House Sparrows attacks.

One person reported putting sparrow spookers on two nest boxes early — one during bluebird nest building (before an egg was laid), and one before Tree Swallows occupied a box (a previous swallow occupant was killed by House Sparrows).

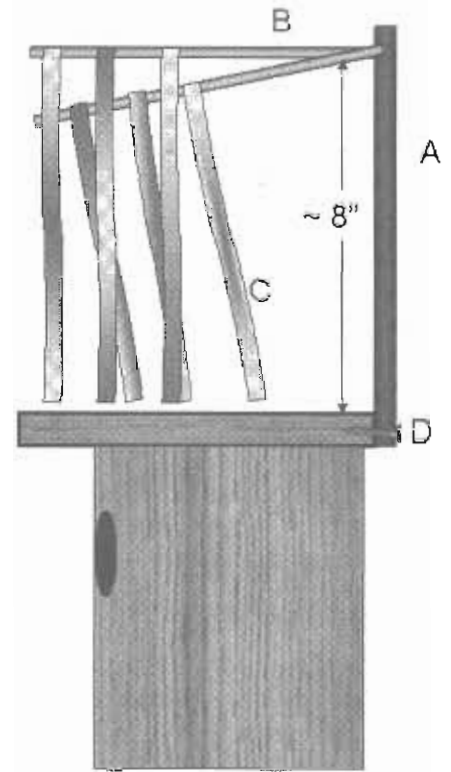
In both cases, the bluebirds and swallows accepted the "early" spooker and went on to successfully nest. However, as noted above, the spooker is usually installed after the first egg is laid for two reasons: 1) to avoid nest abandonment, and 2) to prevent House Sparrows getting used to it over time, as often happens with fishing line.

I can think of only two teal limitations to sparrow spookers. Waiting until the first egg is laid may afford House Sparrows the nerve-racking opportunity to drive bluebirds away, or trap and kill adults inside the nest box before laying begins. Secondly, its use is probably not feasible on a large bluebird trail. However, I believe a sparrow spooker is an invaluable tool for backyard bluebirders, or those who manage a small trail. It is an extremely effective way to protect nesting bluebirds and their offspring in areas where House Sparrows are abundant.

(Thanks to Cher Layton and Yvonne Domingos for their input on sparrow spookers.

Elizabeth (Bet) Zimmerman is an environmental scientist who maintains several bluebird trails in northeastern Connecticut. She welcomes emails on your experiences with sparrow spookers at ezdz@charter.net. More information on passive and active House Sparrows control methods is available on her website at www.sialis.org.

Schematic drawing at right: "A" is the stick attached to the back of the nest box. "B" shows the pair of horizontal braces to which are attached "C", the Mylar strips or other flexible material. Drawing by E.A. Zimmerman.

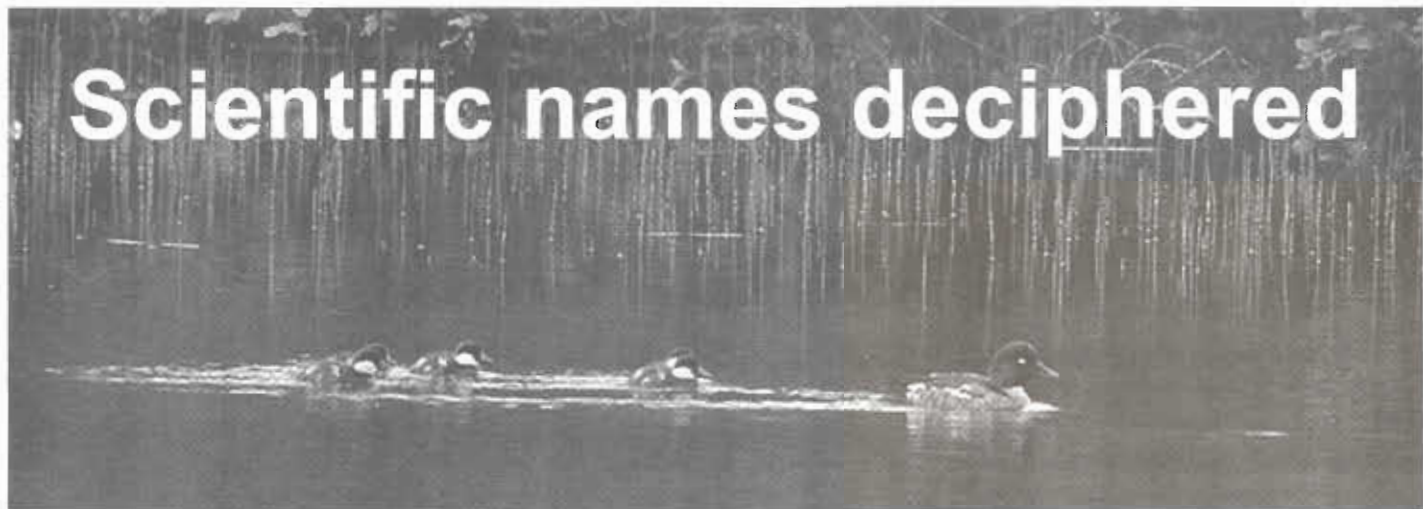


Custom-made Bluebird Nesting Boxes



Each box is an original. Contact Michael Rhonehouse of Floe, WV 25235. Call (304) 286-5043 evenings. These boxes are approved by NABS.

Scientific names deciphered



Above, a hen *Bucephala clangula*, the Common Goldeneye, with her babies. Read on to learn what that scientific name means.

All birds have two names, a common name — Eastern Bluebird, for example — and a scientific name — in the case of this species, *Sialia sialis*.

Most common names can be easily explained. Our three bluebird species, for example, all bear geographic references, Eastern, Western, and Mountain. Some birds carry names derived from their appearance: White-breasted Nuthatch. Others are named for people. John James Audubon named several species for friends or associates, for example. Among those birds is MacGillivray's Warbler, named by Audubon for William MacGillivray, a Scottish artist and professor who was co-author on the artist's bird text, "Ornithological Biography."

Scientific names, however, are not as easily deciphered. Here are some North American cavity-nesting species with explanations of their scientific names. Scientific names come in two parts, the group or generic name first, the individual or trivial name second.

Eastern Bluebird, *Sialia sialis*: From the Greek *sialis* meaning "kind of bird."

Western Bluebird, *Sialia mexicana*: The first specimen collected came from Mexico.

Mountain Bluebird, *Sialia currucoides*: From the Spanish *curruca*, meaning "the linnet," and the Greek *oides*, meaning "like." Like the linnet, which is a European finch with red on its breast.

Tree Swallow, *Tachycineta bicolor*: From the Greek *tachys* meaning "quick" or "swift" and the Greek *kineo* meaning "to move." A swift mover. *Bicolor* means two colored.

Violet-green Swallow, *Tachycineta thalassina*: *Thalassina* is Greek for "like the sea," for the sea-green color of the bird's plumage.

Black-capped Chickadee, *Parus atricapilla*: Each of North America's seven species of chickadee has the group name *Parus*. It means variegated. The individual name, *atricapilla*, is from Latin: *ater*, meaning black, and *capilla*, meaning hair of the head.

Common Goldeneye, *Bucephala clangula*: From the Greek *bous*, meaning ox or bull, and the Greek *kephale*, meaning the shape of the head. The first word of the goldeneye's scientific name refers to the shape of its head. The second word, *clangula*, comes from Latin and means



Picoides pubescens, the Downy Woodpecker.

diminutive of clangor or noise. This refers to the slight whirring noise made by the wings of this duck.

Hooded Merganser, *Lophodytes cucullatus*: From the Greek lophos, meaning “crest” and dytes, meaning “a diver.” The second word of the scientific name is Latin for “hooded.” A crested diver with a hood.

Wood Duck, *Aix sponsa*: Aix is Greek for “a kind of waterfowl.” Sponsa is Latin for “betrothed.” In other words, this is a bird dressed for a wedding.

Note that many of these references are to the appearance of the male birds only. Female birds rarely were a consideration in the naming event.

American Kestrel, *Falco sparverius*: Falco is falcon, from the Greek falx, meaning “sickle” for the shape of the bird’s talon’s and bill. Sparverius refers to sparrows, implying incorrectly that this small falcon preys frequently on members of that family.

Eastern Screech-Owl, *Otus asio*: Otus is Greek, meaning “an eared owl.” Asio is Latin for “a kind of horned owl.” There is a redundancy here.

Western Screech-Owl: *Otus kennicottii*: An eared owl named for Robert Kennicott, an American naturalist of the mid-19th century.

Belted Kingfisher, *Ceryle alcyon*: Ceryle is from the Greek word kerylos meaning a sea bird. Alcyon also is Greek, from the mythical character Alcyon who grieved so pitifully after her husband drowned that the gods changed them both into kingfishers.

Red-headed Woodpecker, *Melanerpes erythrocephalus*: From the Greek melas, meaning black, and herpes, meaning a creeper. Erythros is Greek for “red,” cephalus a Greek word referring to the head. A red-headed black bird that creeps.

Downy Woodpecker, *Picoides pubescens*: Picus is Latin for “a woodpecker.” Oides is Greek meaning “resembling.” Pubescens is Latin, and refers to the hairs of puberty.

Northern Flicker, *Colaptes auratus*: From the Greek kolapto, meaning “to peck with bill, to chisel.” Auratus is from Latin and means “golden.” There are two forms of the Northern Flicker, one with yellow shafts to its wing feathers, the namesake form, and the other with red shafts.

Great Crested Flycatcher, *Myiarchus crinitus*: Myia is Greek for “a fly,” archos Greek for “a ruler” — ruler of the flies. Crinitus is Latin for hairy, which must refer to the crest the bird displays.

House Wren, *Troglodytes aedon*: From the Greek trogle meaning “hole” and dytes meaning a diver; aedon is a songstress. The daughter of Pandereus in mythology,

Aedon was changed into a nightingale by the gods (but into a wren by the man who named this species, Louis Jean Pierre Vieillot, a French ornithologist who fled to America during the French Revolution).

House Sparrow, *Passer domesticus*: Passer is from Latin, meaning sparrow (even though the bird is a member of the weaver finch family), and domesticus is Latin for house. Such simplicity for a bird presenting such complex problems.

(Most of the information for this article was taken from the book “The Dictionary of American Bird Names, Revised Edition,”



Male birds are very territorial during mating season, working hard to keep rival males from their territories and/or mates. This Western Bluebird in Camino, California, is no exception. It is vigorously attacking the bird it sees in the reflecting globe, its own image, of course. Unnecessarily battling a reflection in a window or other reflective surface is not uncommon for birds. You can hand the bird a victory by covering or removing the reflecting item. The photos were taken in early April by Frederick L. Pilot, in his yard in Camino, in the western foothills of the Sierra Nevada mountains.

The story of how they found that 'extinct' woodpecker

When Tim Gallagher put into motion the effort that led to discovery in Arkansas of at least one live Ivory-billed Woodpecker, he gave us more than a bird long thought extinct. He gave some legitimacy to the stories of the bird that had accumulated over the past six or seven decades, and to the storytellers who were laughed at or scorned for believing their own eyes.

Gallagher was driving southern back roads, collecting such stories in 2003 and early 2004. He and a friend, Bobby Ray Harrison, also slogged into swamps and wet woods, to see for themselves what was or wasn't there. Ivory-bills had captured Gallagher, his imagination and his hopes. He was a believer.

He also is a fine writer, editor of North America's premier birding magazine, *Living Bird*, published by the Cornell Laboratory of Ornithology. This last fact is perhaps not coincidental to Gallagher being the one to lead us not out of but into the wilderness where the bird was seen.

The Cornell Lab centers much of its work on the efforts of birdwatchers like you and me. Citizen scientists it calls us. It collects your sightings and mine, your reports of birds in your yard, and turns them into true science. The people at the Cornell Lab believe you.

And perhaps that is the single most important thing that Gallagher brought to his search for stories and woodpeckers: He believed. When he learned of a web-site remark about an interesting bird seen in a bayou in southeastern Arkansas, he had enough belief to follow the lead. If it sounded like someone had seen an Ivory-billed Woodpecker, well, maybe they had.

And a few days later, luckier by far than the others who search for this bird, he too saw

Book Reviews

By Jim Williams

an Ivory-bill. His sighting came in early 2004. It set in motion an intense year-long effort by the Cornell Lab to document the bird, to prove beyond argument that the Ivory-bill lived.

Gallagher has written a book about all of this, his travels, the stories he heard, the storytellers, and, of course, finding the bird. It is "*The Grail Bird*," published by Houghton Mifflin, price \$25. This is the third book about this bird species to be published in recent months, and it is the best by far.

But, then, I favor storytelling. I like tales of muddy swamps and long drives on rainy nights, of fast-food and cigar smoke. It's great fun to read about close calls with cottonmouth snakes, and about a woman who can bear birds talk to her, long distance.

Gallagher's writing is as real as the Dirty Moore boil-in-a-pouch dinners that his friend Bobby Ray fixed for swamp dinner. Dirty Moore gives you nourishment (well, of a sort) for the body. Gallagher nourishes your spirit of discovery and adventure. He creates the urge to load your canoe and your waders in your car and head down the Mississippi River to some seldom-visited bottomland where the trees are big, but not as big as the stories. Gallagher introduces us to people like Mary Scott, who retired from her banking career mid-stream to live in a yurt (yes, yurt) in her parents' backyard in California, so she could devote her time to searching for birds no one has seen for lifetimes.

Thanks to Bob Russell of Minnesota, an Ivory-bill believer from way back who infected me with the search bug, I was with Mary, and Bob, and several other birders when she (maybe) saw an Ivory-bill in

Louisiana in 2000. I was there when the animal psychic, a friend of someone in our party, called us by cell phone from a thousand miles away to say that the woodpeckers had told her we were making too much noise in the woods.

Gallagher tells of Fielding Lewis, a Louisiana boxing promoter who one day in 1971, with his Kodak Brownie camera, took two photos of an Ivory-billed Woodpecker. Those pictures eventually damaged the reputation of a respected ornithologist who showed them to the world. Fakes, the pros said; you're a fool, there are no Ivory-bills.

It's not that Gallagher believes in animal psychics or thinks that boxing promoters are better sources than the professional ornithological community. It is simply that he did not laugh and walk away when he heard the stories. He followed them, and saw the bird.

A living Ivory-bill was perhaps the biggest secret the birding world has known, and it was amazingly well kept for over a year, while Cornell teams scoured the swamp, trying to photograph the bird while others worked to protect the land. During this time, between search trips, Gallagher worked on this book. It recounts events just weeks before the late-April press conference that revealed this discovery.

I am, of course, a believer, too. Gallagher writes about places I have been and people I know. All of that aside, this is the best birding book in years. It combines hope and optimism with mud to your waist and stew heated in swamp water the color of gravy.

You read it and want seconds.

Affiliates of the North American Bluebird Society

The North American Bluebird Society serves as a clearinghouse for ideas, research, management, and education on behalf of all bluebirds and other native cavity-nesting species. NABS invites all state, provincial, and regional bluebird organizations to become NABS affiliates in "A confederation of equals all working together toward a common goal...a further partnership in international bluebird conservation". No cost is associated with affiliating with NABS. Your affiliated organization will be recognized

and listed on the NABS web site. If your organization has a newsletter, please forward a copy to our headquarters. To find out more about becoming a NABS affiliate, read our Affiliate Letter. Notice: If you are listed below, please check listing to see if it is current. If not, please contact webmaster@nabluebirdsociety.org with the correct information.

CANADA

Alberta

Calgary Area Bluebird Trail Monitors
c/o George Loades, 167 Canterbury Dr. SW
Calgary, AB, Canada T2W1H3
bluebird@creb.com
Ellis Bird Farm, Ltd.
c/o Myrna Pearman, Box 5090
Lacombe, AB, Canada T4L 1W7
myrna@ellisbirdfarm.ab.ca
Mountain Bluebird Trails Cons. Society
Contact: Gwen Tietz
P.O. Box 401 Str Main
Lethbridge, AB Canada T2K-3G9
403-553-2780

British Columbia

Southern Interior Bluebird Trail Society
Sherry Linn, President, Box 494
Oliver, BC, Canada V0H 1T0
goldstrm@vip.net

Manitoba

The Friends of the Bluebirds
3011 Park Ave.
Brandon, MB, Canada R7B 2K3
204-727-5102, fax: 204-728-7346
smitha@brandonu.ca Contact: Ann Smith

Ontario

Ontario Eastern Bluebird Society
2-165 Green Valley Drive
Kirchener ON , Canada N2P 1K3
Contact: Bill Read

UNITED STATES

Arkansas

Bella Vista Bluebird Society
c/o Jim Janssen, 27 Britten Circle
Bella Vista, AR 72714. 479-855-7277

California

California Bluebird Recovery Program
2021 Ptarmigan Drive #1
Walnut Creek CA 94595
925-937-5974, fax: 925-935-4480
cbrp@valinc.net

Colorado

Colorado Bluebird Project
c/o Bob Priester, 6060 N. Broadway
Denver CO 80216. 303-291-7253
bluebird.project@state.co.us

Georgia

Bluebirds Over Georgia
c/o Frances G. Sawyer
5858 Silver Ridge Dr.
Stone Mountain GA 30087
fgsawyer@bellsouth.net
770-469-6672

Idaho

Our Bluebird Ranch
152 N 200 E, Blackfoot ID 83221
208-782-9676. pjhbarnes@micron.net
Rocky Mountain Bluebirds
c/o David Richmond
HC67 Box 680, Clayton ID 83227
208-838-2431, fax 208-838-2685
fowers@salmoncountry.net

Illinois

JoDavies County BBRP
c/o Grace Storch
431 Scadel Road, Elizabeth, IL 61028
bluebird@naturalarcguardians.org
East Central Illinois Bluebird Society
c/o Loren Hughes
1234 Tucker Beach Road, Paris, IL 61944
217-463-7175. suziq@comwares.net

Indiana

Indiana Bluebird Society
P.O. Box 356, Leesburg IN 46538
219-858-9050. bluebird@maplenet.net
The Brown County Bluebird Society
c/o Dan Sparks
P.O. Box 660, Nashville, IN 47448
812-988-1876, fax: 812-342-3820
b4bluebirds@yahoo.com
American Bird Conservation Association
c/o Merlin Lehman
59980 C.R. 35, Middlebury, IN 46540

Iowa

Iowa County Songbird Project
c/o Jim Walters
1033 E Washington, Iowa City IA 52240
319-466-1134. james-walters@uiowa.edu
Bluebirds of Iowa Restoration
c/o Jaclyn Hill
2946 Ubben Ave., Ellsworth, IA 50075-7554
515-836-4579. hillhome@netins.net
Iowa Bluebird Conservationists
c/o Jerad Getter, P.O. Box 302
Griswold, IA 51535 712-624-9433
jgetter@hotmail.com

Kentucky

Kentucky Bluebird Society
c/o Bob Ivy
PO Box 3425, Paducah, KY 42002
270-898-6688 or 731-688-0031
bobivy@centrityel.net
www.biology.eku.edu/kybluebird.html

Louisiana

Louisiana Bayou Bluebird Society
c/o Evelyn Cooper
1222 Cook Road, Delhi, LA 71232
emcooper@bayou.com
www.labayoubluebirdsociety.org

Massachusetts

Massachusetts Bluebird Association
Contact: Hileya Priest
89 Pulpit Hill Rd., Amherst, MA 01002
413-549-3937, fax: 413-549-2901
MaBLU@pi.snet
www.massbluebird.org

Minnesota

Bluebird Recovery Program
(Audubon Chapter of Minneapolis)
c/o Mary Ellen Vetter
P.O. Box 3801, Minneapolis MN 55403
mvetter@mninter.net

Mississippi

Mississippi Bluebirds
c/o Tena Taylor
192 CR 457, Calhoun City MS 38916
Day 662-628-6611, evenings 662-628-1625
fax: 662-628-6300; cblbluebirdert@tycom.net

Montana

Montana Bluebird Trails, Inc.
c/o Bob Niebuhr
Box 794, Ronan, MT 59864
406-676-0300 ayleswor@roman.net
bluebrdbob@prodigy.net
www.blackfoot.net/~bluebirds

Nebraska

Bluebirds Across Nebraska
c/o Derry Wolford
705 9th Ave., Shenandoah, IA 51601
E-mail: derrywolford@hotmail.com
www.bbne.orgw

New Hampshire

New Hampshire Bluebird Conspiracy
c/o Bruce Burdett
P.O. Box 103, Sunapee NH 03782
bluebird@rds.net. 603-763-5705

New York

New York State Bluebird Society
c/o Kevin Berner
499 West Richmondville Rd.
Richmondville NY 12149
518-294-7196. bermerk@cobleskill.edu
Schoharie County Bluebird Society
c/o Kevin Berner
499 West Richmondville Rd.
Richmondville NY 12149
518-294-7196. bermerk@cobleskill.edu

North Carolina

North Carolina Bluebird Society
c/o Dempsey Essick
PO Box 1149, Welcome, NC 27374
336-731-3499, fax 336-732-3444
essickart@lexcominc.net
Rutherford County Bluebird Club
P.O. Box 247, Ellenboro, NC 28040
Contact: Christopher Greene

Ohio

Ohio Bluebird Society
c/o Bernie Daniel, 9211 Solon Dr.
Cincinnati, OH 45242
bdaniel@cinci.rr.com

Oklahoma

Oklahoma Bluebird Society
Mark Weathers, PO Box 269
Tulsa, OK 74101-0269
918-241-2473, fax: 918-699-3358
salia@worldnet.att.net

Oregon

Prescott Bluebird Recovery Project
c/o Voice of Prescott
P.O. Box 1469, Sherwood OR 97140
503-245-8449. email@prescottbluebird.com
Audubon Society of Corvallis
Elsie Eltzroth, 6980 NW Cardinal Rd.
Corvallis OR 97330 541-745-7806

eltzroth@peak.org

Pennsylvania

Bluebird Society of Pennsylvania
P.O. Box 267, Enola PA 17025-0267
c/o Joan Watroba
717-766-2102, fax 717-790-0568
rpunt@ezonline.net. www.thebsp.org
Purple Martin Conservation Assoc.
Edinboro University of Pennsylvania
Edinboro PA 16444
814-734-4420 (Louise Chambers)
Fax: 814-734-5803
info@purplemartin.org

Tennessee

Benton County Bluebird Society of Tennessee, Inc.
Dan McCue, President
108 Bland Street, Camden, TN 38320
731-584-5060. dmccue5960@aol.com
Tennessee Bluebird Trails
c/o Steve Garr
P.O. Box 190, Mt. Juliet, TN 37121
615-612-4546
tnbluebirdtrails@msn.com
www.tennesseebirds.com

Texas

Texas Bluebird Society
c/o Pauline Torn
P.O. Box 40868, Austin, TX 78704
info@texasbluebirdsociety.org
www.texasbluebirdsociety.org

Virginia

The Virginia Bluebird Society
Barbara Chambers, 8911 Morland Lane
Annandale, VA 22003
703-978-6609; bj.chambers@verizon.net
www.virginiabluebirds.org

Washington

Cascadia Bluebird & Purple Martin Society
c/o Dr. Michael Pietro
3015 Squalicum Pkwy # 250
Bellingham, WA 98225

Wisconsin

Bluebird Restoration Assoc. of Wis.
Rt. 1, Box 137 Akron Ave.
Plainfield WI 54966
Lafayette County Bluebird Society
14953 Hwy 23, Darlington WI 53530



North American Bluebird Society

Get all the membership forms with payment through PayPal available at www.nabsbluebirdsociety.org
or call 1-800-447-7272 for more information on membership, renewals and donations

2547

<input type="checkbox"/> New Membership	<input type="checkbox"/> Renewal	Name: _____
<input type="checkbox"/> 1 Year	<input type="checkbox"/> 2 Years	<input type="checkbox"/> 3 Years (\$6.00 discount)
<input type="checkbox"/> Adult \$20.00		Address: _____
<input type="checkbox"/> Household \$22.00		City: _____
<input type="checkbox"/> Life \$600.00		State/Province: _____ Zip: _____
<input type="checkbox"/> Organization \$10.00		Phone: _____
<input type="checkbox"/> Small Business \$60.00		Email: _____
<input type="checkbox"/> Corporate \$125.00		
Additional Donation		
<input type="checkbox"/> \$50.00 <input type="checkbox"/> \$60.00 <input type="checkbox"/> Other _____		
Total Payment		
<input type="checkbox"/> \$50.00 <input type="checkbox"/> \$60.00 <input type="checkbox"/> Other _____		
<input type="checkbox"/> Please add \$2.00 for courier delivery post office not include quantity "Standard" \$15.00		
Visa/MC/AmEx/Discover/Novus/Int'l 4307835458 How do you learn about the North American Bluebird Society?		
Visa <input type="checkbox"/> MasterCard <input type="checkbox"/>		
Card # _____		
Expire: _____ Signature: _____		

Payment must be sent in US funds
North American Bluebird Society, P.O. Box 244, Wilmore OH 44689-0244

NABS MISSION

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
Wilmore, Ohio 44689

Summer 2005
Please recycle

Non-Profit Organization
U.S. Postage Paid
Permit No. 4
Madelia, MN 56062

11010101010101010101010101010101

*****CALL FOR ADC 71099

61472 7/1/05

S1 P14

EVELYN COOPER
1222 COOK RD
DELHI LA 71232-6946