Bluebird

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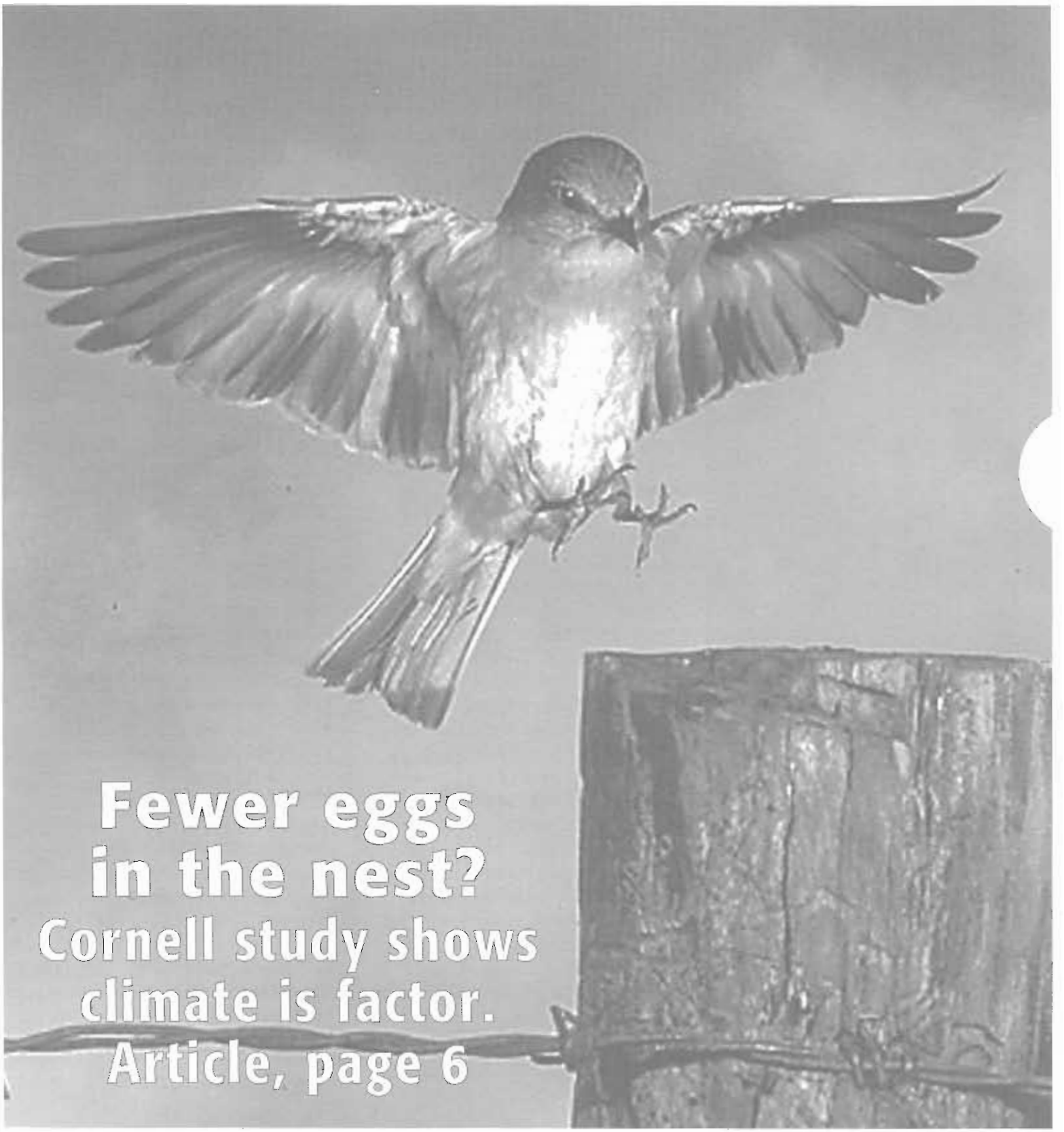

Fewer eggs in the nest?

Cornell study shows climate is factor.

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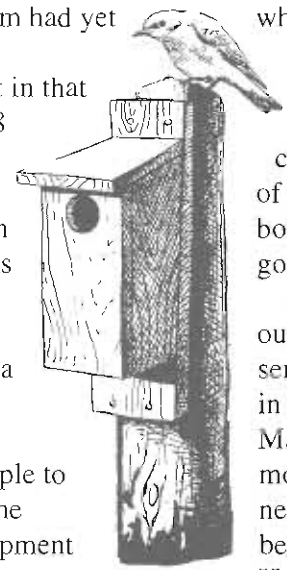
The Hole Thing

Dean Sheldon Jr.

Sunday afternoon, June 29th....an email from Steve Eno in Nebraska announces that the Iowa Bluebird Conservationists group has just been formed and has plans to affiliate with NABS. Affiliate? Just eight short years ago (in 1995), that term had yet to be applied to NABS.

Imagine, if you will, that in that very brief period of time, 48 other state, regional, provincial and local bluebirding groups have come in nnder the NABS umbrella as affiliates. That process has tied together thousands and thousands of bluebirders in a common cause: bluebird conservation.



One of the very first people to see the enormous value in the potential of this new development was Doug LeVasseur, now past president of NABS. His initial view was far more than merely supportive: he quickly became affiliation's strongest advocate. His words of encouragement went first to the Ohio Bluebird Society and spread out from there to bluebirding groups all across the continent. In its trademark pioneering approach, Minnesota's Bluebird Recovery Program became the first to respond to the affiliation call. The rest is, as they say, history.

Fifteen years of commitment to NABS as a director and officer, put Doug in a unique position to strengthen support for this major organizational development. Simply speaking, no one else could have done it. His calm, assuring words of encouragement erased doubts and paved the way for simplifying the process leading toward affiliation for dozens of groups.

His words brought confidence, but more than that, he and Ethel-Marie hit the road traveling all across the continent in support of affiliation and bringing his cheerful and optimistic message to bluebirders everywhere. With his matinee-idol manner, he was a welcomed guest at annual meetings, workshops and bluebird conferences in every corner of the land. His message was both simple and direct — "you gotta love bluebirds."

Doug LeVasseur rounded out a distinguished career of service to NABS when we met in Kearney, Nebraska, this past March. BUT...less than two months later, he has accepted a new and exciting title on behalf of NABS: embajador. He has agreed to be NABS' ambassador and point man for the new NABS' initiative "Bluebirds in Mexico." With Doug, the Texas Bluebird Society, Texas Parks and Wildlife, and countless birding contacts in Mexico, we hope to extend the message and method of bluebird conservation.

Over the years, Doug's travels have taken him to Mexico and Central America many times. He knows the language and customs of those living south of the Rio Grande....and he surely knows bluebirding. Sounds like an unbeatable combination, doesn't it? The ever-present plush bluebird, riding on his shoulder at almost all bluebird meetings, is the ontward and visible sign of Doug's unusually strong devotion to bluebirds, bluebirding and bluebirders. What beats within his chest is the other part of the story.

From the Executive Director

Lisa Bulick

Zeleny Fund Update

In 2000, the North American Bluebird Society established the Lawrence Zeleny Giving Circle and Endowment Fund in honor of NABS founder Dr. Lawrence Zeleny. Since its inception, generous donors across North America have contributed more than $60,000 to the Endowment Fund. We are well on the way to reaching our initial goal of $100,000.

The fund is designed to provide a financial base to sustain the conservation mission Dr. Zeleny envisioned in 1978 when he founded the North American Bluebird Society. Endowment funds make non-profit organizations financially stronger by generating interest income, which helps fund research, education, and special projects.

Contributions may be made in several ways:

• Gifts honoring the memory of bluebirders are automatically deposited to the Endowment Fuud.

• Donations made in the name of bluebirding friends or family members may be designated for the Endowment Fund.

• United Way donations designated for NABS may also be earmarked for the Endowment Fund.

• Contributions of at least $5,000, as a single payment or pledge, qualify for membership in the Lawrence Zeleny Giving Circle.

• Bequest to NABS Endowment Fund.

• Contributions of any size to help build the endowment.

Your generous support and financial contributions to the Lawrence Zeleny Endowment Fund will help NABS reach its initial goal of $100,000 and insure the financial future of the North American Bluebird Society.

NABS is a 501(c)3 non-profit charitable organization. Your financial advisor can provide information concerning the tax benefits of contributing to the Endowment Fund. If you have questions on the fund or NABS, call me at 888/235-1331, e-mail lisabulick@nabluebirdsociety.org.

NABS grant applications being accepted

Applications for NABS research grants for 2004 are being accepted. The grants support work directed toward the restoration and conservation of the three bluebird species as well as all other cavity-nesting bird species that are indigenous to North America.

Grants go to students, scientists, and lay individuals engaged in research on native cavity-nesting bird species. Projects are supported on a single year basis (up to $1,000 per year) as determined by the availability of funds. However, with the demonstration of satisfactory progress, via a timely report, additional funding, (maximum of three years) can be requested on a year-by-year basis.

Because of the apparent reductions in bluebird populations over the winter of 2002-03, only the bluebird research grant category (i.e., research on one of the three species within the genus Sialia) will be accepted for the 2004 funding season.

Complete details can be obtained on the NABS Internet site: www.nabluebirdsociety.org/grant2.htm.

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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.

On West Nile Virus, pairing, perches, and House Sparrows

To the editor,

Much has been written about the effect of the West Nile Virus on crows, Blue Jays, chickadees, and other bird species. To this point I have not read anything about its effect on House Wrens. I bring this up because I have seen a dramatic drop in House Wren nests.

Over the past three years I have run a 40-box line, and have counted 11 to 23 successful House Wren Nests per year since 2000. So far this year I have seen only two House Wren Nests in the 40 boxes I work. Has anyone reported a similar experience?

Next: For the 2002 nesting season I installed 10 back-to-back boxes scattered among 40 established boxes, an effort to support the bluebirds versus Tree Swallows. Without getting to a statistical war, at the end of this season I will take down the paired boxes and establish them in 10 new locations so that for 2004 season I will have 50 singles.

My experiment with pairing versus singles has shown to my satisfaction the pairing has not worked at all. The only pairing that did work was with a House Sparrow and a Tree Swallow.

Based on the 2002 result and the results observed to date this year, it is my assumption the 10 new singles will do as well, or better, for bluebirds as the 10 pairs have done.

— Tom Martin, 5549 Laurel Ave., La Grange, Illinois

Perches bring birds

To the editor,

The recent trend of urban residents moving to the country, known as urban sprawl, may not be as bad as it sounds as far as bluebirds are concerned. Many of these new rural residents purchase tracts of former farmland with lots of three to 10 acres and more. If these large lots have recently been used as fields many of the new residents buy a big riding lawn mower and keep several acres mowed regularly.

These large lawns can be ideal habitat for bluebirds, especially if there are trees on the perimeter. All that is needed to create ideal bluebird habitat is a few well-placed bird boxes and some perch poles.

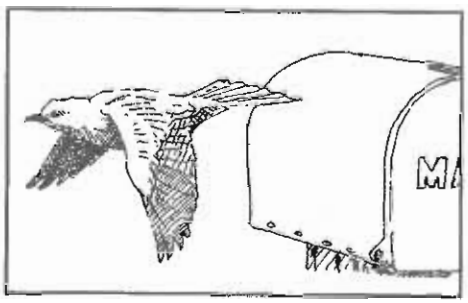
I am a firm believer in the use of perch poles to attract bluebirds. These poles provide 360 degrees of feeding area for bluebirds whereas trees on the perimeter provide only 180 degrees at best. I use an inch to inch-and-a-half hardwood sapling about eight to 10 feet tall. At the top I leave a few branch stubs about six to eight inches long.

When I check out my field I can usually find one or more bluebirds on a perch pole. In a 10-acre field I have about 10 perch poles. Many other birds including tree swallows, phoebes, goldfinches and kingbirds also use the poles. *— Fred A. Huntress, Jr., 67 Strout Road, Poland Spring, Maine*

House Sparrows

To the editor,

The house sparrow problems here have been getting steadily worse. So far this year I have trapped and eliminated 64 house sparrows on my 33-box trail, an average of nearly two sparrows per box, and there are still several males eluding my traps. It is obvious that if I were not removing house sparrows from this world I



would be having little success with bluebirds.

I am very concerned that the trapping and elimination of house sparrows is receiving little publicity from NABS, in *Bluebird*, and even in the recent printing of tbe NABS Official Pocket Field Guide. We seem to be soft on house sparrows, afraid of offending people, and if this continues to be the view. I am very concerned for the future of our wonderful bluebird-comeback programs. *— Bob Walshaw, Coweta, Oklahoma*

Write to us about your adventures

Have you ever met a bluebirder who did not have a good story to share? This is your chance to share with other readers of this magazine. We want to begin a new feature called Trail Mix. You can contribute whether your trail holds one nest box or a thousand. We will focus on one subject in each of the next four issues of *Bluebird.* You are asked to tell us a short story revolving around that subject. please limit your story to no more than 250 words.

Here is our subject list:

• Next issue — Mammal adventures on your trail. Deadline Oct. 31.

• Spring 2004 — People you have met on the trail. Deadline Jan. 31

• Summer 2004 — Weather adventures.

• Fall 2004 — Tricks of the trade.

NABS 2004 convention in New York

The NABS Convention for 2004 will be held in Ithaca, New York, July 7 to 11. The meetings will be held at the Clarion University Inn and Conference Center, high on the hill above Cayuga Lake. The Cornell Lab of Ornithology is only a short distance from the Clarion and tours of the new $30 million visitor center are on the agenda.

The Clarion University Inn will accept room reservations at any time. Address is 1 Sheraton Drive, Ithaca, NY 14850, phone 607/257-2000. Room rates are $79 per night. Please mention NABS convention for this rate. Also, watch future issues of *Bluebird* for hotel and convention registration material.

Among the many interesting places near the convention site is the Paleontological Research Institution/ Museum of the Earth. This museum was founded in 1932 by Gilbert Harris, professor of geology at Cornell, to house his collection and library. The new museum tells the history of the Earth and explores the geology of the northeastern United States. It includes the skeletons of the Hyde Park Mastodon and of Right Whale.

For the newest convention information, visit the web site www.NYSBS.com. Click on NABS 2004 (column on left side). You can also get more information regarding the convention by contacting Carl and Phyllis Zenger by e-mail at cpzenger@adelphia.net or by calling them at 716/434-7568. You may also contact President, David and Phyllis Smith by e-mail at klip@clarityconnect.com.

GlenArbor Golf Club designated first NABS Bluebird Conservation Partner

By Lisa Bulick

GlenArbor Golf Club in Bedford, New York, has been recognized as the first NABS Bluebird Conservation Partner. This designation was created to acknowledge significant contributions both to bluebird conservation and financial support for NABS. The announcement was made in May when the club hosted the first annual Bluebird Open golf tournament. GlenArbor is a NABS Corporate member.

The scheduled events the day of the tournament included a tour of the bluebird trail and a talk on bluebirding basics that I was privileged to present. GlenArbor pledged the proceeds from this and other tournaments to NABS, assisting in our mission of education, research, and conservation.

GlenArbor is a 200-acre private club nestled in the New York hillside just an hour north of Manhattan. The course, designed by golf legend Gary Player, opened in 2001. Course owners worked with Sasaki and Associates, an environmental consulting firm, to create a comprehensive plan that included food plots, nesting areas, and water-quality testing, so GlenArbor could balance the needs of nature with the needs of golfers.

Course superintendent Ken Benoit is typical of many of his peers, using minimal chemical controls and expanding the use of natural controls as often as possible. For example, rather than cut down centuries-old specimen trees shading the 11th green, Benoit pumps oxygen through the herringbone drainage system beneath the turf, aerating the root system, to turn a problem green into another picture-perfect green.

Walking the grounds, it's easy to forget one is on a golf course. With its rolling hills and stands of mature hardwoods and specimen trees, GlenArbor feels more like a park. The natural setting is home to a diverse assortment of animals, trees, birds, and aquatic species, and it is not uncommon to see golfers with binoculars enjoying the numerous songbirds inhabiting the area, including nuthatches, orioles, Tree Swallows, and bluebirds.

The open spaces and manicured fairways and greens at GlenArbor represent an ideal environment for bluebirds. Local bluebirder Tom Smith was instrumental in helping GlenArbor develop its bluebird trail. Every Tuesday, he and Melodee Benoit monitor the 24-box trail. In the first season, 87 bluebirds fledged from 17 boxes. It looks like 100 bluebirds will fledge this season.

Because of its commitment to land stewardship, GlenArbor Golf Club is a worthy recipient of the first NABS Bluebird Conservation Partner designation. As GlenArbor leads the way in balancing recreation with responsible conservation, everyone benefits — especially bluebirds.

New bluebird group starts work in Iowa

Iowa has a new bluebird group. The Iowa Bluebird Conservationists (IBC) began in June with Jerad Getter as president. Other officers were named at the meeting, quarterly member meetings were set, and a quarterly newsletter was established. The address of IBC is P.O. Box 302 Griswold, IA 51535. Mr. Getter can be reached by at jgetter@hotmail.com or by phone at (h) 712-624-9433 or (w) 712-527-9685.

Fewer eggs in the nest?

Cornell study shows climate to be a factor

By Caren B. Cooper and Tina Phillips

If you peek into the nest of a bluebird, will you find three eggs, seven eggs, or something in between? A new study from the Cornell Lab of Ornithology suggests that the answer may depend in part on how warm the weather is when a bluebird lays its eggs.

Using data from citizen-science participants, the study showed that laying a large number of eggs is apparently disadvantageous in warm weather.

Eastern Bluebird eggs in large clutches have higher rates of hatching failure at warm southerly latitudes than at cooler northern latitudes. They also have higher rates of hatching failure late in the season, when temperatures are presumably warmer than in early spring.

The notion that birds typically lay fewer eggs in warmer climates isn't new; for decades, researchers have documented how birds at more southerly latitudes have smaller clutches than those farther north. Previously, Lab researchers used data from citizen-science participants to show that Eastern Bluebirds generally lay more eggs from south to north and east to west, and that they lay larger clutches at the beginning of the season than near the end.

The reason, though, was unclear. Most studies of clutch-size variation have focused on constraints during the nestling period, examining how factors such as day length, predators, and food availability might limit the number of young that parents raise at different latitudes.

These studies largely ignored what goes on in the eggs before they hatch. The new study is one of the first to show that egg-laying and incubation constraints help account for both seasonal and latitudinal trends in hatching failure and clutch size.

The results suggest that Eastern Bluebirds lay fewer eggs in warmer climates, in part to avoid temperature-related hatching failures associated with incubating large numbers of eggs.

These hatching failures are not caused by the overheating of eggs; it rarely gets hot enough in a nest box to kill the embryos. Rather, the danger appears to be developmental abnormalities that occur during prolonged exposure of some eggs to temperatures just below the warmth of normal incubation.

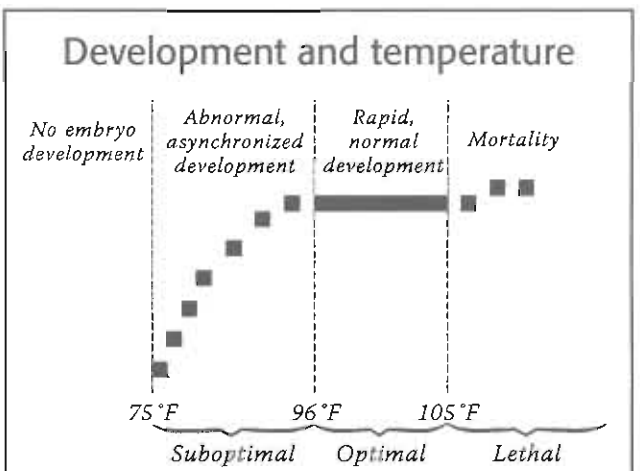
The study was based on more than 11,000 nesting records of Eastern Bluebirds from across their breeding range, submitted to the Lab by participants of The Birdhouse Network and the Cornell Nest Record Program.

Researchers Caren Cooper, Wesley Hochachka, and André Dhondt at the Lab of Ornithology and Greg Butcher at Audubon tested the egg viability hypothesis, proposed by Scott Stoleson at the USDA Forest Service and Steven Beissinger at the University of California, Berkeley.

This hypothesis suggests that in warm weather, eggs in large clutches are more likely to develop abnormally than eggs in small clutches because of prolonged exposure to suboptimal temperatures.

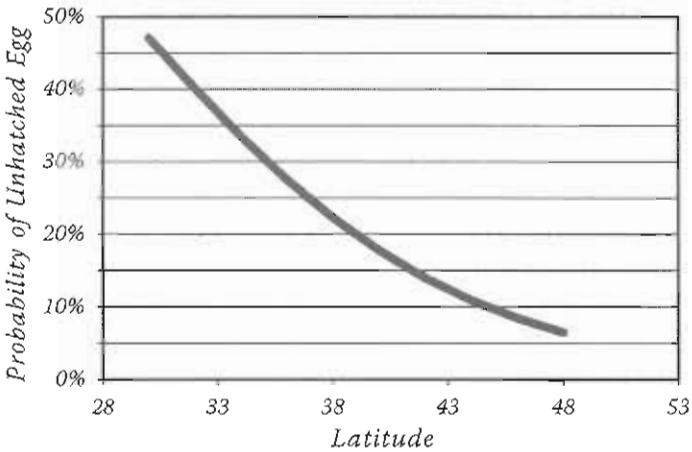
Most songbirds lay just one egg per day and do not begin sitting on their eggs until the last or second-to-last egg has been laid. By waiting to incubate until the clutch is complete, the birds ensure that the eggs will start developing, and later hatch, at about the same time.

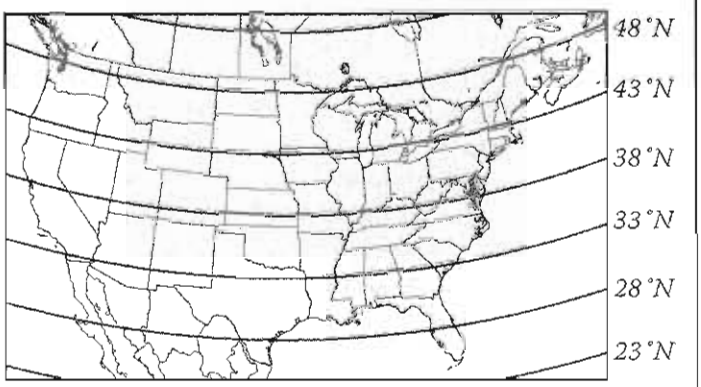
Before a female begins incubation, eggs remain viable for extended



Embroyonic developmlent relative to temperature: eggs can remain viable for extended periods before incubation begins if temperatures are below 75 degrees F. If the air temperature warms the eggs to between 75 and 96 degrees F., abnormal development may occur. Normal development occurs when birds incubate their eggs to temperatures 96 to 105 degrees F.

Percentages of hatching failure at different latitudes





The percentage of Eastern Bluebird nests with at least one unhatched egg varied across latitudes. Almost half of all clutches in the South contained at least one unhatched egg, compared with very few unhatched eggs in clutches in the North. Analyses were based on 11,000 nest-attempt records from The Birdhouse Network from 2000 and 2001 and the Cornell Nest Record Program from 1955 to 1988.

periods at temperatures below 75 degrees F. When she begins sitting on the eggs, her body heat warms them to from 96 to 105 degrees F, the optimal range for embryonic development.

However, if the egg is exposed to warm weather for extended periods, embryonic development may begin even before the female starts incubating. At temperatures between 75 and 96 degrees F, embryos experience unsynchronized tissue growth, abnormal development, and mortality.

In a large clutch, the first few eggs that a female lays may fail to hatch if they are exposed to these prolonged suboptimal temperatures before incubation begins.

The study's results showed that, indeed, bluebird nests in more southerly climates were more likely to have at least one unhatched egg. Additionally, clutches laid late in the breeding season, when temperatures are presumably warmer, were 1.5 times more likely to contain an unhatched egg than clutches laid at the beginning of the breeding season.

Hatching failure was high among larger clutches, late in the season, and under sunny, humid conditions with low precipitation. In warm weather, hatching failure may be an important constraint in limiting clutch size.

Birds attempting to nest in the South or late in the season seem to face an inescapable penalty if they lay a large clutch. If they wait to begin incubation until after they lay the last egg, their first eggs may be exposed to prolonged suboptimal temperatures, possibly leading to hatching failure.

If they begin incubation as soon as they lay the first egg, they could ensure better success at hatching, but nestlings would hatch over a number of days. When that happens, the last young to hatch may die because the parents are more likely to feed its larger siblings.

The data revealed further complexities in incubation patterns that suggest the need for additional study. For example, the amount of time it took the eggs to hatch varied from 11 to 19 days, depending on the time of the season, the geographic location, and the number of eggs in the clutch. As the season progressed and ambient temperatures rose, the eggs hatched on average 1.5 days earlier, irrespective of latitude.

Did the eggs hatch sooner because the females began incubating their clutches before all the eggs had been laid, perhaps to reduce the eggs' exposure to the suboptimal temperatures that can cause hatching failure? Or did the hotter weather make it easier for the females to keep the eggs warm during incubation, speeding up the embryos' development?

To help answer these questions, The Birdhouse Network is continuing to collect information on clutch size and will soon be analyzing data from dime-sized loggers that record temperatures in the nest. Temperature fluctuations reveal details of the female's incubation activity. These data will help show whether the female waits to begin incubation until after she lays the last egg.

They also will show whether females are better at keeping eggs in the optimal temperature range when

Continued on page 8

– Cornell study

Continued from page 7

the weather is warm. Researchers will even be able to investigate whether large clutches are advantageous in cooler weather because they retain heat better, allowing the female to incubate the clutch more efficiently.

The current study is one of the first to show how widespread temporal and geographic trends in clutch size can be explained by processes that occur during the incubation period. The implications extend to potential impacts of global warming on birds. If global temperatures rise high enough to influence egg viability, hatching failures may increase, and birds maybe forced to lay smaller numbers of eggs.

These insights were made possible by the powerful data set collected by citizen-science participants over large geographic scales and long time periods. We thank all of the citizen-science participants who contributed their data to this study, and encourage further contributions through The Birdhouse Network.

(This article first appeared in the Summer 2003 issue of Birdscope, published by the Cornell Lab of Ornithology. It is used with permission. Visit the Lab's web site at www.birds.cornell.edu to learn more about how you can contribute to The Birdhouse Network and other Lab citizen-science programs.)

On the cover

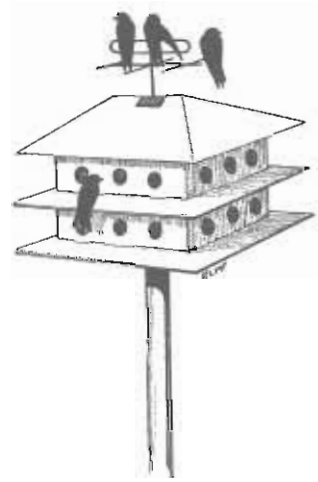
This fine photo of an Eastern Bluebird about to land on a fence post was taken by Ed Erkes, a member of NABS and of the North Carolina Bluebird Society.

REVIEW

The Purple Martin

The Purple Martin, Robin Doughty and Rob Fergus. 2002. University of Texas Press, Austin. viii + 93 pp., 18 text figures, hardcover.

Martin mania is serious madness, a contagious affliction affecting thousands of otherwise ordinary people in North America. I myself am a happy victim. Each spring, all day and every day for week after week, we blast Purple Martin dawn song from speakers located underneath our long-empty martin houses in the hopes of establishing a new colony.



In *The Purple Martin*, Robin Doughty and Rob Fergus try to explain this madness to martin lovers and to bewildered on-lookers. Purple Martins (*Progne subis*) have long been one of North America's favorite birds. The highlight of the book for me was the historical account of the early interest in martins by colonists and ornithologists during the 1700 and 1800s.

Colonists observed Native Americans providing natural gourds as nest sites for martin colonies, so adopted this tradition and built bird houses for martins. Martin houses were widespread and common in the eastern and southern U.S. even in the 1800s. Just think, people provided housing for and had a keen interest in martins before House Sparrows and European Starlings began their rampage on North America. The founder of the Audubon Society, George Grinnell, used martins as one of his examples for why the nation should protect, rather than harvest, birds.

This book provides a detailed and accurate species account of the classification, breeding range, and natural history of the species. These are the tools that martin landlords will need to truly understand the birds they devote so much time and energy to. The writing style in these chapters is somewhat dry and academic, so casual readers may have to work a bit to digest the information.

The book concludes with a discussion of martin landlords and practical advice on the types of housing and maintenance required for a martin colony.

I recommend this book especially for martin lovers; it is not exciting reading but does contain a wealth of facts that martin landlords will enjoy learning.

— Bridget J. M. Stutchbury, Department of Biology, York University, Toronto, ON M3J 1P3, e-mail: bstutch@yorku.ca

Helping nature provide FALL FORAGE

By David Eastman

I awaken in the summer months to the soft "cher-wit" call of a male Eastern Bluebird, high in the sugar maples' crowns between our old New England farmhouse and the fields beyond. His mate is incubating in one of my log-front birdhouses, just a hundred feet out in the old pasture.

The pasture used to be hayed in June, but no longer. We mow it now only in late summer, permitting the low-bush blueberries to take over. Delaying this clipping also allows the wild strawberries to prosper, creating food for the Cedar Waxwings and other songbirds. I've learned some other things for managing forage plants for bluebirds and songbirds that visit us in the summer, then migrate out in the fall months.

The bluebirds here in New Hampshire usually only raise one brood, two if we are lucky. However, we will enjoy their presence to fall migration if the blueberry crop is abundant. They feast on the powdery-blue frnit. The parent birds teach the youngsters this crop and other shrubs' bounty is for the taking — as are the insects in the trees across the field.

I have come to appreciate all the soft-mast-producing shrubs, and think they are very important to birdlife. The berry crop replaces the insect diet for the birds up here, following our infamous bug season. Songbirds that can shift their diets to tbe cherries, brambles' fruits, and berries of the viburnums and dogwoods may stay around until fall — if the production of wild fruits is plentiful, and not ruined by drought.

Along forest borders, I look for these edge-loving plants and release them from competition using lopping shears, pruning saws, and gasoline-driven brush saws. I give the wildlife forage shrub all the growing space, cutting back other plants that touch its branches. In this way, alternate-leaf dogwood, mapleleaf viburnum, the hawthorns, scarlet elder and American elder, the shadbushes, etc. can be given room for their vegetative growth; reproductive efforts will follow.

In the southeast, Eastern Bluebirds do well with the flowering dogwood, American holly, and other fruit-bearing shrubs that are especially valuable when they retain their soft mast crop through the winter months.

What foresters call succession on any given site means that some other plant life will follow that which is initially there. If you want the berrying plants to sustain themselves, then you must assist their survival since they are pioneers. Otherwise, they will be shaded out by the trees outgrowing them. Our bird-feeding, sun-loving, open-space shrubs will gradually die out and be replaced as time passes. Few grow in the forest understory. You must arrest this succession.

The ecological story on why shrubs feed the birds is seed dispersal. Within the pulp of the fruits that birds eat, tiny seeds pass through tbeir bodies to be deposited elsewhere in their environment. Research already has documented those fruiting species that are most preferred: grapes, elders, and blueberries feed nearly 100 bird species each.

Some, like the black cherry trees, retain their fruit over a few weeks. While songbirds are chowing down on the ripening fruit, they are also dropping out the seeds of other species they bave been feeding on. You will find raspberries, elders, the American cranberry bush, and anything else sprouted from seeds the birds brought coming up underneath. Look for these shrubs to create a wildlife food plot, and clip out the offending hardwoods that are springing up with them.

In this manner, you will eventually eliminate a lot of competing vegetation that prevents your bird-feeding shrubs' full occupation of your land's edges and copses. More and more shrubbery will arise, because the birds do the planting while feeding.

A wildlife-feeding corridor results, becoming a watchable-wildlife trail in late summer and the fall season, as migrants consume these fruits for flying energy. For you to the south of New England, this is the way to assist bluebirds' survival in the off season.

(Mr Eastman can be reached at P.O. Box 59 Center Sandwich, NH 03277, cebirdman@hotmail.com.

Nest-site availability and selection by cavity-nesting birds

By Kathryn Aitken

Shelters such as tree cavities, burrows, shells, and termite mounds are a central resource in many wildlife communities. Some species create these structures, others in the community use them.

For example, prairie-dog burrows provide shelter and nest sites for Burrowing Owls and for other birds, reptiles, amphibians and mammals. Termite mounds are sources of nest-sites, heat, and cover for Golden-shouldered Parrots and African giant rats. Empty mollusc shells are used for nesting and shelter by a variety of aquatic species such as hermit crabs, octopi and fish.

In this article, I will discuss cavity-nesting birds. This is an examination of nest-site availability and selection in a cavity-nesting community. This presents results of my graduate work, funded in part by a grant from the North American Bluebird Society.

Species that rely ou tree cavities make up one of the largest groups of shelter users. In the Pacific Northwest, research shows that cavity-nesters make up 25 to 30 percent of forest-dwelling bird and mammal species,

Most cavity-nesting species are obligate hole nesters. This means that they require a suitable cavity in order to reproduce. Because they depend on trees for nesting and other activities, they are considered sensitive to forest cutting.

Woodpeckers, or primary cavity nesters, excavate holes in trees for nesting and roosting. These holes are then used by a variety of secondary cavity nesters, which cannot excavate their own cavities. Bluebirds, for example, are secondary cavity users.

Competition for cavities may be intense, and some populations of secondary users are limited by cavity availability. Woodpeckers are considered keystone species in forest communities because they create the cavities so many other species use. Research shows that woodpeckers thus can influence the diversity and abundance of other cavity nesters in the community.

My research was conducted on Becher's Prairie, 40 km (25 mi) west of the town of Williams Lake in the Chilcotin region of interior British Columbia, Canada. (Note to NABS members who attended the 2002 convention:

Researcher Kathryn Aitken uses a mirrored device to check a nesting cavity in an aspen tree in British Columbia.

Williams Lake is about 500 km/300 mi northwest of Penticton, BC). The area consists of native grassland interspersed with small groves of trembling aspen and pine, larger stands of mature conifer forest, and small pothole lakes.

This diversity of habitat types contributes to the region's considerable biological diversity, and Becher's Prairie is renowned for its rich bird community. It is one of the most important breeding and staging areas for waterfowl in Canada. It is also a breeding area for some uncommon or threatened species, such as Long-billed Curlew,

Sandhill Crane, Northern Hawk Owl, and Great Gray Owl.

The diversity of the Chilcotin region extends to its cavity-nesting community, which has 32 species of birds and small mammals. Seven of the 12 woodpecker species found in British Columbia occur there, including Northern Flicker, Red-naped Sapsucker, Pileated Woodpecker, Hairy Woodpecker, Downy Woodpecker, Three-toed Woodpecker, and Black-backed woodpecker. Almost one-quarter of the bird species in the region are cavity-nesters.

From May through July of 2000, I located and monitored 219 cavities in 35 aspen groves and five continuous forest stands. Aspen groves ranged in size from about one acre to 8.5 acres (0.5 to 3.5 hectares), and were scattered throughout the grassland, spaced between 110 and 1,100 yards (100 and 1000 m) apart. I checked each cavity with a mirror and flashlight one to two times per week, and I considered nests active if I located at least one egg or nestling.

I also monitored holes used for nesting and roosting by small mammals, such as Red Squirrels. I monitored only those cavities that I could reach with a ladder up to about 16 feet [5 m] above ground).

After nesting was completed, I collected cavity, nest tree, and habitat data for all active nests and unoccupied holes. I also placed small automatic temperature-recording devices (data loggers) in 30 cavities after birds had finished nesting to examine temperature characteristics of the cavities.

Eighty-five percent of cavities had been created by birds, while 15 percent were naturally occurring. Most naturally occurring holes were located in the stub ends of broken branches. Northern Flickers excavated about 50 percent of cavities I surveyed, while Red-naped Sapsucker cavities were the next most abundant at 13 percent. Hairy Woodpeckers, Downy Woodpeckers, Red-breasted Nuthatches, and Black-capped Chickadees excavated a total of four percent of holes I surveyed.

Cavity density was considerably lower in continuous forests compared to aspen groves. Cavity density in groves was 22 per 2.4 acres (per hectare), while it was just two per 2.4 acres (per hectare) in continuous forest. However, there were no differences in cavity characteristics (e.g. size, height above ground, etc.) between the two habitats.

Cavity occupation in aspen groves was 41 percent. In continuous forest, only 10 percent of cavities were occupied. At the community level, cavities in aspen groves were used more than expected from their availability. This may reflect the preferences of the most abundant cavity nesters in the region — flickers, European Starlings, Mountain Bluebirds, and Tree Swallows, all of which are associated with open habitat (aspen groves are more open than continuous forest).

Nests in groves may provide better access to foraging sites for aerial foragers (swallows, bluebirds) and grassland foragers (flickers, starlings). Only 41 percent of cavities in aspen groves were occupied in 2000. This was lower than occupancy rates reported in several other studies where as many as seven of every 10 cavities was in use.

The woodpecker assemblage on Becher's Prairie is diverse, providing a variety of options for secondary cavity nesters. Northern Flickers, in particular, may produce several cavities per year, resulting in a surplus of those holes in the habitat. This may explain the low overall cavity occupancy rates in this study area.

Newly-excavated cavities were preferred to old cavities for nesting, and both excavator and non-excavator species used new cavities. Reproductive success of woodpeckers and secondary cavity nesters is higher in newly excavated cavities on Becher's Prairie (Aitken and Martin, unpublished data) but competition for these sites may be intense.

Secondary cavity nesters may gain access to newly

This Northern Flicker, one of the species involved in Ms. Aitkin's study, looks unpleased with his opportunity to contribute to science.

excavated holes if woodpeckers excavate more than one cavity per year, or by physically evicting woodpeckers from new holes. This is especially common among starlings, which destroy eggs and kill nestlings of flickers in order to take over nest cavities. I have also seen Tree Swallows usurp a newly-excavated cavity by attacking the resident Red-naped Sapsucker.

Although secondary cavity nesters used some newly excavated holes, not surprisingly the majority of their nests were in old cavities. Naturally occurring cavities and those excavated by Red-naped Sapsuckers were used less than expected from their availability, while Northern Flicker cavities were used more than expected. This may be due to the large size of flicker cavities, which can accommodate a broader range of secondary users.

Researchers have found that cavity volume and entrance size were the most important variables in determining cavity use among secondary-cavity nesters. Given the importance of flickers as cavity providers in this community, the impact of increased starling abundance on their populations in the last 30 years in the region needs to be examined.

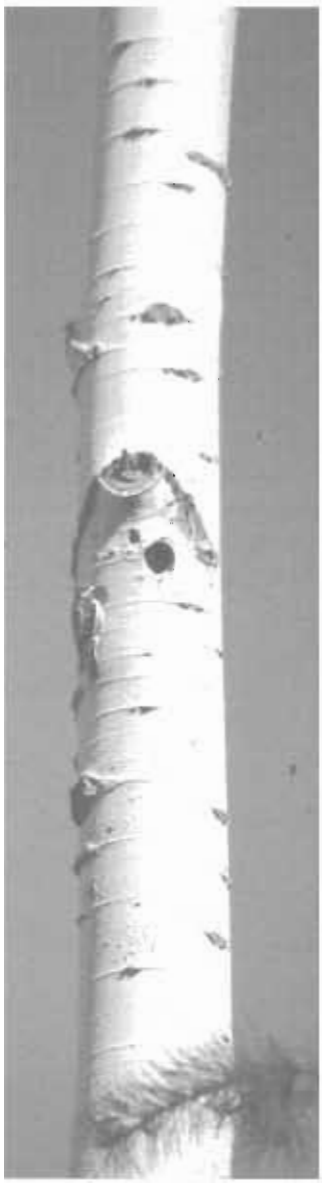
Dr. Karen Wiebe of the University of Saskatchewan (Saskatoon) reports that starlings evict flickers from cavities less frequently in this region than in other areas of North America, but that competition from starlings could cause flickers to delay nesting and produce smaller clutch sizes (Wiebe 2003).

When I examined cavity use at the community-level (all species grouped together), I found that occupied cavities were deeper and were spaced farther from other trees than were unoccupied holes. As well, cavity nesters preferred trees with fewer total cavities. As the number of cavities in the tree increased, the likelihood that any of the cavities were used for nesting decreased. Avoidance of trees with more than one cavity was particularly strong among Northern Flickers, Tree Swallows, and European Starlings.

Swallows, starlings and Mountain Chickadees preferred live unhealthy trees for nesting, and avoided dead, decaying trees. Flickers, Mountain Bluebirds, and Red Squirrels showed no preference for either live or dead trees, and used both in proportion to their availability.

The stage of nest-tree decay may affect temperature inside the cavity, the stability of the nest tree, and the ability of predators to access nests. Squirrels often chew open cavities in soft, decayed trees, while black bears rip cavity walls open. Researchers have found that Black-capped Chickadees and Carolina Chickadees had higher nest success in trees with harder wood and thicker walls.

There was considerable variation in orientation of occupied nest cavities. Flickers, swallows and starlings all avoided north- and east-facing cavities, while bluebirds and Mountain Chickadees preferred these holes. Flickers and swallows both preferred south-facing cavities.



A nesting cavity in an aspen tree. Birds using cavities were found to prefer trees with fewer cavities.

Studies of open-cup nests have suggested that orientation can influence nest temperature, which in turn influences egg laying, incubation patterns, hatching success, and nestling survival. However, there is little agreement on the influence of cavity orientation on nest-site selection, microclimate, or reproductive success for cavity nesters.

I found that mean cavity temperature, as well as maximum, minimum and overall temperature ranges, did not vary significantly with orientation. Conversely, Wiebe (2001), working in the same study area, found that south-facing Northern Flicker cavities were hottest and that flickers were more likely to excavate south-facing cavities.

Other researchers have found that excavators preferred east-facing cavities, while non-excavators showed no preference. Other researchers also have found no relationship between nest-site selection and orientation in Red-naped Sapsuckers and Collared Flycatchers.

Tree Swallows have been shown to prefer south-southeast facing cavities, but research showed that nest success was not related to orientation.

For cavity-nesters, the benefits of a particular cavity orientation may depend on openness of the surrounding habitat, location of gaps in the tree canopy, and other features such as the location of streams or ponds, woodland edge, and nearby obstructions.

As part of my PhD research, I will continue to investi-

gate nesting ecology in this community. Low cavity occupation rates on Becher's Prairie suggest that suitable cavities are abundant and not a limiting factor for this community. However, to test this, I am conducting nest box addition and cavity removal experiments on several of my study sites.

I will also examine some of the trade-offs faced by species that nest in both continuous forest and aspen groves by comparing reproductive success and nest predation between the two habitats. Finally, because there is considerable overlap in the types of cavities used by different species in this community, I will examine how competition influences nest-site use and excavation rates.

Acknowledgements

I would like to thank the North American Bluebird Society for providing some funding for this project. I also received funding from the Natural Sciences and Engineering Council (NSERC), Lignum Limited, the Science Council of British Columbia, and a VanDusen Graduate Fellowship in Forestry. Additional funding for field work was provided by the Canadian Wildlife Service (Environment Canada) and Forest Renewal British Columbia.

I would like to thank all of the field assistants who worked on this project, especially Ryan Wilds and Marty Mossop. My supervisor, Dr. Kathy Martin, and my supervisory committee (Drs. Jamie Smith, Peter Arcese and Val LeMay) provided valuable advice and support. (Kathryn Aitken is a PhD candidate at the Centre for Applied Conservation Research, Faculty of Forestry, University of British Columbia, 3625-2424 Main Mall, Vancouver, BC, Canada V6T 1Z4. She can be reached by e-mail at kaitken@interchange.ubc.ca.)

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Sparrows dying in England

House Sparrows in Great Britain, once common in towns and cities, are dying, the population thought to be about half of what it was 25 years ago. This is according to a recent newspaper article in England.

Theories abound on why so many sparrows have been lost, the article said, including the destruction and damage of natural habitats, cat and sparrow hawk predation, and pollution.

"However, a PhD student from Leicester says her in-depth study into sparrow breeding may hold the key to solving their mysterious disappearance." according to the article.

"Kate Vincent is discovering that second or third broods of chicks born to birds living in urban areas are dying before they leave the nest. In 2002 nearly half of the suburban second and third hatches did not survive. Ms. Vincent says starvation and infection are both possible reasons for death." says the report. She has learned that early and late broods are fed different foods. Spring chicks seem to be treated to beetles and daddy longlegs while the problematic midsummer birds are fed on smaller insects like aphids.

More research is planned, the article said.

In Norway, help for starlings

It all depends on where you are: from a note on birds and birding in northern Norway:

Starlings are present on all the farms, mostly thanks to a project of nest-boxes, carried out everywhere around Tromsø by the local birdclub. This may sound like the height of folly for all you starling-haters abroad, but here this is a most welcome guest, which had decreased alarmingly in recent years, and where one of the causes may well have been the unsuitability of modern housing as a nesting locality for starlings (and sparrows); the nest box programme has visibly helped!

— Wim Vader, Tromsø Museum, 9037 Tromsø, Norway, e-mail wim@tmu.uit.no.

European Starlings (estimated North American population 121,000,000) outnumber all 22 species of woodpeckers (70,000,000) and the three species of bluebirds (15,000,000) combined in Canada and the U.S. as a whole. — *From the Partners in Flight North American Landbird Conservation Plan.*

Web sites and books about bluebirds

Nowadays, internet web sites offer as much information on a given subject as do books. Here are some bluebird web sites recommended in Bluebirds Fly, the newsletter of the California Bluebird Recovery Program. And, for the old-fashioned among us, who still like a book in their lap, here is a list of recommended reading from the newsletter of Bluebirds Across Nebraska. (That newsletter, by the way, has a handsome new look.)

Web sites worth a look

• http://audubon-omaha.org.bbbox/bbfaq.htm. This is Jim McLochlin's site, renowned continent-wide as a library of bluebird information.

• http://home.earthlink,net/~lviolett. This is the site of Linda Violett, a California bluebirder who pays particular attention to nest-box styles and box problems.

• http://www.treeswallows.org. Here, Jan Wasserman of Ventura County, California, has much information on Tree Swallows, gathered from 12 years of Tree Swallow studies.

• http://www.nestbox.com. This is the site of Arlene Ripley, NABS board member from Maryland.

• http://birds.cornell.edu/birdhouse/, click on Bluebird-L Reference Guide. There are other related pages as well. This site is a joint project of the Cornell Birdhouse Network and NABS.

• And, of course, www.nabluebirdsociety.org, our own site, another library of data on North American cavity-nesting bird species with emphasis on bluebirds.

Books for your library

• Bluebird Trails, A Guide to Success by Dorene Scriven.

• Enjoying Bluebirds More, a booklet by Julie Zickefoose.

• Mountain Bluebird Trail Monitoring Guide, a booklet by Myrna Pearman.

• How to Control House Sparrows, a booklet by Don Grussing.

• Landscaping for Wildlife by Carrol Henderson of the Minnesota Department of Natural Resources.

• Woodworking for Wildlife by Carrol Henderson, perhaps the most complete book of simple plans for nest boxes and bird feeders.

• Wild About Birds by Carrol Henderson, the ultimate bird-feeding guide for birders in the north central part of the United States.

(This book list came from the newsletter of NABS affiliate Bluebirds Across Nebraska. Many affiliates, including BAN, sell these or other books. Check with your affiliate as you shop.)

Researcher discovers one blowfly species really is two

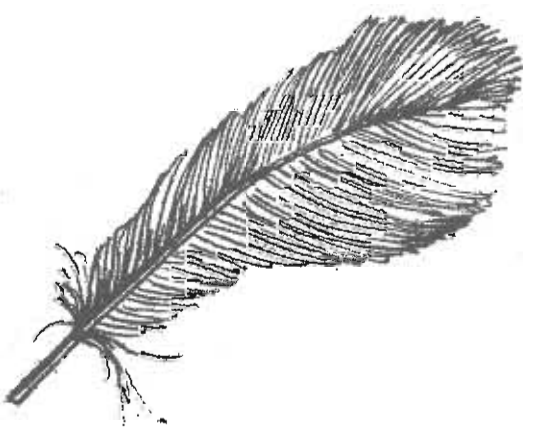
A new species of blowfly has been named. Where once there was *Protocalliphora sialia*, the western form of the common bird-nest blowfly, now there also is *Protocalliphora occidentalis*.

Entomologist Dr. Terry Whitworth of Puyallup, Washington, discovered that the insect regarded as one species really was two. His paper explaining the discovery and naming the new blowfly was published the June issue of Proceedings of the Entomological Society of America.

In 2002, Dr. Whitworth discovered two other new blowfly species.

In October, he will publish a key to identification of the 27 species of North American blowflies. The key will permit identification of the insects from the pnparia left in the nest when the insect matures.

Dr. Whitworth welcomes bird nests for examination of blowfly and parasite evidence. Send him the nest (boxed, in a sealed plastic bag), and he will provide you with species identification and information on parasite populations. He can be reached at Whitworth Pest Solutions, Inc., 2533 Inter Ave., Puyallup WA 98372.



Two female Eastern Bluebirds use same nest, two males feed

By Douglas Sciberras

I've been monitoring Bluebird houses for 16 years now and thought I had seen it all. However, the events of this past spring have added a new one to my list of bluebird experiences.

It all started around a lone Petersen house I have perhaps 30 feet from my front porch. I found two pair of birds using that single box!

I noticed two different females going into the box, sometimes separately, sometimes together. I also had two males viciously fighting each other constantlty on and around the box.

Upon inspection, I found a nice nest with eight eggs! Although I have no way of really knowing, my guess would be those eggs were laid by both females.

When the eggs hatched, I noticed only one female remained while both males, no longer fighting, were helping her feed the young. Unfortunately, the hatchlings disappeared from an undisturbed nest before they got to fledging size.

After a short absence, the birds started over in a different box, a single female and both cooperating males. Five birds hatched out and fledged from this nesting.

(Doug Sciberras lives in Highland, Michigan. His e-mail address is badnboyz@earthlink.net.)

Wasp aerosol kills without using poison

A poison free wasp and hornet killer in an aerosol spray container is being manufactured by the Victor division of Woodstream Corporation of Lititz, Pennsylvania [the mouse/rat trap company. The active ingredients are mint oil (8%) and sodium lauryl sulfate (1%). Inert ingredients include water and carbon dioxide.

The product is dispensed as a penetrating foam and seems to work well, providing a quick kill. It comes in a bright yellow aerosol canister. Cost me $4.45 at a country store near my home.

This product might be just the ticket for your safety during nest-box maintenance, but without harm to the environment. More information can be found at the website: www.victorpest.com. Or, put "Poison Free Wasp & Hornet Killer" in the search box.

— Dean Sheldon, Ripley Township, Huron County, Ohio

Research committee has played important role for 20 years

By Kevin Berner
NABS Research Committee

The North American Bluebird Society (NABS) was founded by Lawrence Zeleny in 1978. Larry was an agricultural biochemist at the Beltsville Agricultural Research Center in Maryland. When he developed his interest in bluebirds he applied his research skills to answer basic questions about nest-box designs and bluebird management. In founding NABS, he felt it was important to promote research related to bluebirds and other cavity nesting birds. NABS didn't just give lip service to research, but provided funds to carry it out as well.

The first research grant proposals were funded in 1983. NABS grants can be used to study bluebirds or other cavity nesting birds anywhere in North America. Typically, the grants have been awarded to graduate students, university professors, or wildlife biologists. The maximum grant that can be awarded is $1,000 per year.

Researchers submit a proposal describing their projects, justification for doing them, and the techniques they will use to collect and analyze the data. Each member of a committee of biologists independently evaluates all of the proposals and the research committee chair tabulates the ratings and selects the individual recipients.

Depending on the NABS budget situation, between four and eight grants have been funded most years. Recipients are asked to submit a report for publication in the NABS journal. In addition, many recipients publish their results in ornithological journals used by scientists within the wildlife profession. Many also present their findings at professional technical conferences and more public vennes. When pooled with other funding sources, these grants have facilitated the gathering of extensive amounts of data that can be used to conserve or restore populations of cavity nesting birds.

Dr. Tedd Gutzke, now refuge manager at Medicine Lake National Wildlife Refuge was the first chair of this committee. He served from 1983 to 1987. Tedd developed the initial procedures for the grant application process. He also developed the first bibliography of research articles related to bluebirds. This was an invaluable document for researchers or bluebird enthusiasts.

"Larry (Zeleny) explained much of what he had learned over the years and inspired me to conduct my own bluebird research."

NABS sold this publication for many years. In 1992 my wife, Nancy Niles, published an updated version of the bibliography, and in 1999, Lee Lattimer, one of my fisheries and wildlife technology students at SUNY Cobleskill completed a second update.

After five years of developing and running the NABS grant program, Tedd turned the research committee over to Cathy Blowhowiak. Cathy administered the grants program from 1988 through 1990 when she turned it over to me. I had expressed interest to then NABS president Sadie Dorber in joining the NABS board of directors. She suggested that since I taught wildlife courses, a more appropriate role for me would be as research chair, so I accepted that position.

Sadie, like Larry Zeleny, was a strong proponent of conducting research to get unbiased assessments of how to best conserve bird populations. She invited me to attend my first NABS board meeting in Silver Spring, Maryland, soon after I took over the committee. At that meeting I was privileged to meet Larry and to see what an incredible individual he was. Sadie and I toured the bluebird research trail he maintained for years at the Beltsville Agricultural Research Station. Larry explained much of what he had learned over the years and inspired me to conduct my own bluebird research. From that point until his death in 1995 he continued to frequently discuss with me his, as well as my own, research ideas.

NABS for years supplied funding for not only the grant recipients' work but mine as well. This funding has helped cover the expenses of my field work so that I could address concerns related to how to reduce predation at nest boxes and which styles of boxes appear to be most attractive to various species of cavity nesting birds.

While most of the research committee's administrative work is done by the research chair, the committee members who review the

grant proposals each year are invaluable in providing varying perspectives on the applications. Typically, four biologists in addition to the chair review the proposals.

One of the longest serving members of the team has been Dr. Jeffrey Brawn of the Illinois Natural History Survey. He has been on the committee for most of its history, and had previously been a grant recipient. Dr. George Hurst of Mississippi State University served for a long period as well. Dr. Tedd Gutzke has been involved for the entire history of the grant program and even after giving up the chairmanship has continued to provide constructive review of the proposals each year. Dr. Michael Losito of SUNY Cobleskill has been a reviewer for several years. Dr. David Pitts also was on the committee for many years.

With the awarding of the four 2003 grants in February, NABS has funded 107 research grants over the 20-year period. The funding, which usually has supplemented the researchers' other funding sources, has enabled NABS to broaden the base of knowledge about cavity-nesting birds. It has allowed many researchers operating on shoe-string budgets to expand what they have been able to accomplish.

In the case of graduate students, it has provided them an opportunity to learn how to study wildlife populations and habitats as they seek to advance careers in the wildlife profession. Many student grant recipients are now well established wildlife professionals who have contributed greatly to the wildlife knowledge base. While many grant recipients have moved on to study other species, Gary Ritchison and Wayne Davis have delved so deeply into bluebirds to have published a spectacular book about the species.

The NABS board of directors has consistently shown strong support for maintaining a viable research program. It has provided funds for me to conduct research as well as funding the grants program. In recent years, board members have strongly stressed the need to support applied research, the results of which can be put directly to work in benefiting bluebirds and other cavity nesting birds.

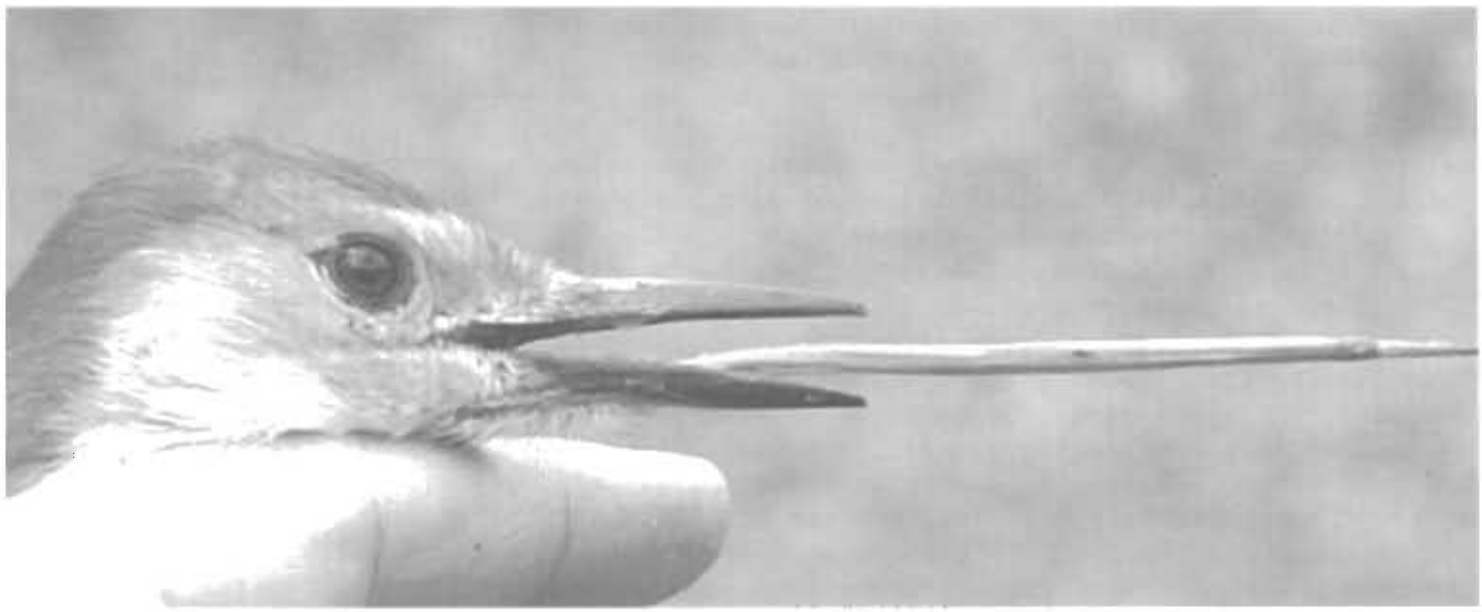
After 12 years at the helm of the committee, I am turning the leadership reins over to Dr. Bernie Daniel of the Environmental Protection Agency and Dr. Steve Pelikan of the University of Cincinnati. Bernie has extensive bluebird experience and is the current president of the Ohio Bluebird Society. His professional position involves research, so he is well equipped to take over this position. Steve is a mathematician who teaches statistics at his university. His statistical expertise will be invaluable to NABS. I'm convinced that their enthusiasm and new ideas will invigorate NABS research efforts.

I would like to thank NABS for giving me the opportunity to become involved with the organization. I have learned a lot from my interactions with members from throughout the U.S. and Canada. Many of those people that I now feel closest to are these NABS members. I feel honored to have been able to try to carry out the NABS research mission that Larry Zeleny so strongly supported.

(Kevin L. Berner is associate professor of fisheries and wildlife technology at the State University of New York in Cobleskill. He can be reached by e-mail at BernerKL@Cobleskill.edu.)

Oct. 31 next deadline for *Bluebird*

The deadline for the Winter 2004 issue of *Bluebird* is Oct. 31, 2003 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.



The tongue of a Red-bellied Woodpecker, extended here to its full length, is an incredible tool. (Photo: Bill Hilton Jr.)

The amazing woodpecker tongue

By Bill Hilton Jr.

Woodpeckers are remarkable creatures with numerous adaptations and behaviors very different from those of other birds.

Straight, strong, chisel-like bills help them tear into dead wood after grubs or to build nesting cavities. Zygodactyl feet — two toes in front and two in back — allow woodpeckers to grip tightly on vertical bark surfaces, and stiff tail feathers and legs form a tripod that braces against a tree as the bird hammers away. The woodpecker skull encloses the brain so tightly it cannot move, avoiding concussions. And the woodpecker's highly efficient neck muscles produce on-going series of rapid movements — and that repetitive rat-a-tat-tat-tat-tat-tat-tat.

In our opinion, however, the most phenomenal aspect of these birds is one we seldom see in the wild: their amazing woodpecker tongues.

Woodpeckers peck on wood in a variety of ways. When starting a nest hole, they hammer their way in and twist their heads from side to side, flinging wood chips left and right and out of the cavity. During courtship, the male looks for a particularly resonant snag or a gutter downspout; on these structures the woodpecker merely drums without penetrating, making a species-specific noise that announces his presence to any female that might be within earshot.

And while feeding, a woodpecker often taps lightly on a dead limb, cocks its head and listens intently for sounds of grubs scurrying away or chewing on wood, and — in many species — drills out a hole just wide enough to insert its beak.

It is while grub-hunting that the incredible capabilities of the woodpecker tongue really come into play. Galleries formed in trees by wood-boring beetle larvae are often quite extensive. Located just beneath the outer layer of wood, these shallow tunnels can stretch up and down the trunk for several inches — even feet — depending on the insect species.

When the woodpecker's bill breaches an insect gallery, it extends its tongue and probes around. If it locates grubs, the woodpecker skewers the prey with its tongue, the tip of which is hard and sharply pointed. After the tip penetrates the soft body of a larval insect, tiny rear-facing barbs grab hold as the woodpecker withdraws its tongue with the succulent food item impaled thereon (see photo of tongue and bill at top of page).

In order to navigate the insect gallery, a woodpecker's tongue must be longer than its bill; in the case of the Red-bellied Woodpecker (see photo), the tongue extends at least *three* times the bill length. In some woodpeckers the tongue is so long it forks in the throat, goes below the base of the jaw, and wraps behind and over the top of the head, where the forks rejoin and insert in the bird's right nostril or around the eye socket.

Within the entire length of

woodpecker's tongue lies the "hyoid apparatus," a linear series of tiny bones sheathed in muscles and soft tissue. The ultra-thin hyoid bones fold up accordion-like along part of their length.

When the woodpecker wants to stick out its tongue, it contracts muscles near the base of the hyoid apparatus. This forces the hyoid bones forward within their sheath and propels the tongue out of the bill. Relaxing the muscles allows the tongue to shorten and brings it back inside.

The woodpecker's tongue also contains paired longitudinal muscles that move it side to side as the bird probes for food. It is believed that woodpecker tongues are especially sensitive to touch, an adaptation that helps greatly in detecting unseen insects within dead wood.

Not all species of woodpeckers have barbed tongues or feeding behaviors like those described above. A Yellow-bellied Sapsucker's tongue, for example, is relatively short and edged with feathery bristles that, through capillary action, help the bird lap up sweet sap that oozes from rows of quarter-inch holes it drills in trees.

(It's worth mentioning that the nectar-lapping tongue of a hummingbird is structured and works in ways like that of a sapsucker, except that the tip of the hummer's tongue is split and rolls into a shallow spoon-like shape.)

Interestingly, the tongue in a newly hatched woodpecker is quite short, which makes it much easier for parent birds to stick food items into the hungry nestling's gaping mouth.

The Northern Flicker has a smoother and exceptionally sticky tongue — all the better to catch ants when this ground-feeding woodpecker probes inside an anthill. The flicker's tongue, measuring more than five inches from tip to base, may be the longest of any North American bird.

In this much-enlarged image, the barbed tongue common to woodpeckers can be seen. The broader object is the lower mandible of the bird's bill. (Photo: Bill Hilton Jr.)

Here at Hilton Pond Center, we once spent half an hour observing a male flicker depopulate an anthill. While we watched, the bird repeatedly stuck out his tongue — not at us, but toward ants that were crawling up and past the base of its bill. With one smooth and rapid motion, the Northern Flicker flicked ont his tongue, flapped it against his forehead, snared the ants in sticky saliva, and drew the unsuspecting insects inside his mouth.

Amazing woodpecker tongue, indeed!

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Wandering bluebirds

Mountain Bluebirds are the frequent flyers

By Jim Williams

If you look at range maps for our trio of bluebird species you can put your finger on only one area of the continent fortunate enough to welcome all three, Western, Mountain, and Eastern. The confluence would be on the western edge of the Texas panhandle.

Those of us east of the Great Plains routinely see but one of the blue threesome — the Eastern Bluebird. Unless there is a vagrant in our neighborhood.

Vagrancy is common among certain bird species. A vagrant, in an ornithological context, is a "bird which has wandered or been blown (by weather) or otherwise transported to a locality beyond its normal range," according to Christopher Leahy in his book *The Birdwatcher's Companion*.

Some people who keep lists of bird species they have seen wait eagerly for the odd vagrant, the species never before seen in their state or province. I remember driving from Minneapolis to the far northwestern corner of Minnesota one spring to catch my first Minnesota look at a sky-blue male Mountain Bluebird.

It was courting a female Eastern Bluebird. The male had claimed a nest box mounted on a fence post along a dusty township road about six hours drive from my home. The visitor from the west nested that year and in subsequent years. During his stay, he was popular with people keeping year or life lists.

Why did he choose that corner of Minnesota for his breeding activities? How did he get there in the first place? He wandered a little bit, the described migration route for these birds including the Dakotas all the way to the Minnesota border. This Mountain Bluebird simply came somewhat farther east than usual, perhaps pushed by a westerly wind, discovering a place to his liking — food, nest, female. In Minnesota, by the way, the species is now considered regular, appearing each year in small numbers.

In David Sibley's *The Sibley Guide to Birds*, small orange dots on the range maps indicate out-of-range sightings. The map for Mountain Bluebird is well seasoned with orange east of the bird's usual range.

Bob Domagalski, a Wisconsin birder who takes great pleasure from record-keeping, currently is compiling rare-bird (vagrant) records for 15 midwestern states. "The Mountain Bluebird has too many records for me to easily track," he wrote in a letter, adding that there are 18 Wisconsin records for this species. Two of those birds were seen on Christmas Bird Counts.

A quick question on BirdChat, an e-mail list of North American birders, produced a snapshot of Mountain Bluebirds far east of their usual homes.

A Mountain Bluebird was seen on Cape Sable Island in Nova Scotia in January of this year, according to Joan Czapalay, president of the Federation of Nova Scotia Naturalists and director of the Nova Scotia Bird Society. She also reports that Nova Scotia some years ago also had a vagrant Western Bluebird, an event of some note. (More on that later.) There are three records of Mountain Bluebird in Newfoundland and two for New Brunswick.

"Florida just got its first record of a Mountain Bluebird, down in the Everglades," wrote Jack Dozier of Alligator Point, Florida. He added that the sighting would be official only after the state's bird records committee had examined documentation submitted by the observer to ensure that what was thought to be a Mountain Bluebird actually was that species. This process is common in most states, lending validity to the various records.

There are several records for Mountain Bluebird in Louisiana, at least one from Pennsylvania, and two documented records for Connecticut.

The latter report, from Mark Szantyr, added that Connecticut has no records of Western Bluebirds. That tends to be the case throughout the eastern half of the country. Mountain Bluebirds often wander. Western Bluebirds rarely do. If you put a loupe to the Sibley range map for that stay-at-home species you can count but 12 orange dots. Ten of them are in Texas, Oklahoma, and Kansas, within spitting distance of usual Western Bluebird territory.

"As for the Western Bluebird," Mr. Domagalski wrote, "there are few records east of any state that touches the Rocky Mountains. In my study area (15 midwestern states and two

Canadian provinces), there are only two valid records for Western Bluebird." Both are in South Dakota. He added that there are four unsubstantiated sight records from Kansas.

How about out-of-range Eastern Bluebirds? Sibley shows vagrancy records in Quebec, Alberta, California, Arizona, and Utah. Sue Drown, a BirdChat correspondent, wrote to say, "We have been enjoying a nice Eastern Bluebird this winter in Logan, Utah, apparently the fourth sighting in the state."

Eastern Bluebirds in winter

An interesting sidelight to movement of bluebirds is the ever-increasing number of Eastern Bluebirds being seen during winter months in states north of the species' usual winter range. Call it non-movement of bluebirds. Birdwatchers in Minnesota reported Eastern Bluebirds often in December and January, perhaps because those months enjoyed very mild weather.

Mr. Domagalski offered a historic perspective on this. He reviewed summaries of Christmas Bird Counts (CBC) in Wisconsin since 1939. The first report of Eastern Bluebird came in 1949, when one was seen.

In the next 18 years, a total of 15 individual Eastern Bluebirds were found. In the 20 years following that, the number climbed to 108 individual birds.

Since 1989, the number of Eastern Bluebirds reported on Wisconsin CBCs is 638. In that span, the high-count year was 2001 when 116 Eastern Bluebirds were reported. Mild winters and the fact that our climate is changing have much to do with this.

While it is not uncommon for fledged Eastern Bluebirds of an earlier nesting to help feed the young of a following nesting, you don't see photos of this behavior very often. Hubert Brandenburg of Hagerstown, Maryland, took this picture at one of the nest boxes he tends. Dick Tuttle, NABS member from Ohio who often presents programs on bluebirds, says this behavior happens in perhaps one brood out of four.

Bluebird News from Shore to Shore

Pauline Tom, NABS director from **Texas**, has been named chair of the NABS Membership Committee. **Darlene Sillick**, NABS secretary and long-time bluebird activist in **Ohio** and nationally, was featured with an interview in the September-October issue of *Wildbird* magazine.

From five to seven Eastern Bluebirds spent the winter of 2002-03 visiting the meal-worm feeder at the home of **Pam Arthur** in **Stillwater, Minnesota**. Bluebirds are often seen in this part of the world during the winter, but a flock is exceptional. The item was reported in the newsletter of the **Bluebird Recovery Program** (BRP) in Minnesota.

A tip on discouraging House Sparrows interested in bluebird nest boxes also was in the BRP newsletter, as was a similar item in the newsletter of the **Jo Daviess County (Illinois) Natural Area Guardians**. Monofilament fishing line (try six-pound test) is stretched tight from the outer edge of the box roof to the bottom of the box, one line on each side of the entrance hole. You will have to create a monnting system that allows front-entry boxes to be opened for inspection. This idea has been tested in Pennsylvania and Kentucky, according to the reports, with **Joan Watroba** of the **Bluebird Society of Pennsylvania** determining that the monofilament line worked best. Give it a try.

The **Virginia Bluebird Society** has presented awards to **Charlie Chambers** (Volunteer of the Year), **Nicole Hamilton** (County Coordinator of the Year), **Bill Seranno** (Blnebirder of the Year), and **Barbara Stinson** (the special Heritage Award). Ms. Stinson has long been active in NABS, serving as a director for 10 years.

Newsletters online is the latest offering to persons interested in the activities and accomplishments of the **Ellis Bird Farm** (EBF) in **Lacombe, Alberta**. Readers will find the semi-annual newsletter as a PDF file on the EBF web site. EBF hopes to save printing and postage costs with this move. Mailed copies of the newsletter will continue to be available.

Arlene Kunkel, long-time and very popular member of the **Ohio Bluebird Society**, who died earlier this year, was remembered with a front-page tribute in the society's summer newsletter.

Mountain Bluebird Trails (MBT), the **Montana** bluebird conservation group, spent $1,000 this year to buy material used by several individnals and organizations to build nest boxes. Over 1,000 boxes were produced. From the MBT newsletter, **Bluebird Tales**, comes word that **Bev Stiger** of **Wolf Creek, Montaua**, had the first bluebird sighting of the season this year, on Jan. 30. That was best for observers on the east side of the mountains. On the west side. **Larry Adams** of **Burley, Idaho**, was first with his Feb. 27 bird.

If you are looking for the hard-to-find one and 9/16-inch bit to cut entry holes for Mountain Bluebirds, here are two sources. MBT members **Rex Campbell** and **Roger Siemens** report that yon can buy a Forstner-style bit in that size for US$6.49 from Woodworkers Supply, 800/645-9292, www.woodworker.com. A second source sells a more expensive bit, US$32.72. Contact Cyber Woodworking Depot, 888/788-9663, www.toolcenter.com. This information was in a recent issue of **Blnebird Tales.**

While the odds of being hit with West Nile Virus are smallish, the Canadian Wildlife Service advises precautions. For bluebirders tending nest boxes these would include washing your hands often as you come into contact with bird fluids of any kind.

A note to all state bluebird organizations: Most of you send me your newsletters. I read them all. This column would not exist without the hard work and interesting items your editors and members put into these fine newsletters. Please keep me on your mailing lists, and if I am not there, please add my name. Many thanks for letting me share in your bluebird adventures. — Jim Williams, Editor, Bluebird, 345 Ferndale Road N., Wayzata MN 55391.

Backyard Birding

• Fresh water in a bird bath or pool is a very effective way to bring birds to your yard. Moving water — just a drip-drip-drip is all you need — is even better. Where cats are a problem, plug a portion of storm gutter on house or garage, keep it filled with water, and let the birds bathe and drink there.

• Cupping your ears with your hands can double your ability to hear faint sounds, like distant bird song.

• When approaching birds for a closer look do not walk directly at them. Approach on an oblique angle to be perceived as less threatening. Try to avoid letting the bird watch you watch it. Animals don't like to be stared at.

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 this 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 your listing to see if it is up-to-date. If not, please contact webmaster@nabluebirdsociety.org with the correct information.

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Calgary Area Bluebird Trail Monitors
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Calgary, AB, Canada T2W1H3
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Ellis Bird Farm, Ltd.
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Lacombe, AB, Canada T4L 1W7
myrna@ellisbirdfarm.ab.ca

Mountain Bluebird Trails Cons. Society
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British Columbia

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Kitchener ON , Canada N2P 1K3
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Denver CO 80216. 303-291-7253
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Bellingham, WA 98225

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Bluebird Restoration Assoc. of Wis.
Rt 1, Box 137 Akron Ave.
Plainfield WI 54966

Lafayette County Bluebird Society
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