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**Cover photo:** Den DiMarco found this male Eastern Bluebird munching on juniper berries in the Edwin B. Forsythe Wildlife Management Refuge in Galloway Township, New Jersey.

**Table of Contents photo:** This Northern Saw-Whet Owl was trying to stay warm a couple of winters ago near Edina, Missouri. Photo by Andy Reago & Chrissy McClaren (https://www.flickr.com/photos/wildreturn/). Printed here under a Creative Commons license.
Hello Fellow Bluebirders!

As I begin my second year in this role I want to thank all the folks at the Affiliates who have given your time and effort to talk with our Regional Affiliate Representatives during the past year. You’ve told us a lot about how you operate and the challenges you face, and I hope we’ve been able to provide you some ideas and suggestions that might help you moving forward. We’ve also been able to provide many of you with NABS Fact Sheets, brochures, etc., for your use and distribution at your meetings and public booths. We thank you for helping us disseminate this information to your members and the public. Our Reps will continue to touch base with you and we’ll attend your meetings when we can, but don’t feel shy about contacting your Rep anytime you’ve got something you want to discuss.

Now that the 2018 nesting season has come to a close, please consider sharing your special experiences with the rest of the bluebirding community by writing an article for the Bluebird journal. Whether it’s an anecdotal story or a summary of a research project you’ve been working on, what you’re doing is important and it is of interest to folks all over North America.

Thank you for all you do for our little blue friends.
As you know, I usually start my columns with a comment about the weather. As I write this note, we are only about 40 days from the official start of winter. We have had relatively mild weather here in SW Ohio, but that can change overnight of course. I hope you have all winterized your nestboxes, and if not, go ahead and do it please!

NABS just received an extraordinary bequest from a long-time member, Mr. Joseph A. Kujanik. One of his interests was helping the environment, especially the survival of bluebirds by making bluebird houses. On December 1, 2014, Mr. Kujanik passed away at his home in Gary, Indiana. We only learned of his death months later, when we were informed that NABS was one of several fortunate organizations named as beneficiaries in Mr. Kujanik’s will. Due to legal complications, the estate was only recently settled, and we learned to our surprise and delight that Joseph had left NABS over $55,000!!! We are looking for a way to memorialize Joseph’s amazing generosity, and we have named a new education grants program after him. I think and hope that would have made him happy. There is a little thumbnail sketch of Joseph’s life at the end of this column and NABS intends to produce a more comprehensive picture of his life for a later issue.

Now on to some other matters of great consequence to NABS. I have broached this topic previously, but have not heard much in response. So let me try again. This is an important area for our Society, and I hope all of our members will read and consider what follows.

Most of you know that NABS is incorporated as a 501(c)(3) non-profit organization. As a result, we have by-laws that set out an annual course of actions and policies that we must adhere to if we are to remain in existence and in good standing. One requirement is to file a Form 990 with the IRS each year showing how we manage and spend our funds. In addition, we must maintain a governing Board of Directors (of at least 15 members), hold an annual election for our Board, and hold an annual meeting that is open to all members.

Consequently, it is the NABS BOARD MEMBERS AND OFFICERS who perform the required functions such as:

- keeping track of our funds (including the Zeleny Fund), and accounting for all of our expenses,
- keeping track of and updating our membership database (so everyone gets their issues of Bluebird!),
- organizing board meetings, and recording the proceedings of each meeting,
- issuing calls for research grants, and then ranking submittals, and finally funding the grants selected,
- maintaining contacts and dialogue with all of our fine NABS Affiliates,
- updating and printing our NABS Fact Sheets and other educational materials,
- keeping our website and Facebook pages current,
- handling our awards programs,
- collecting the mail each week and distributing items (e.g., membership applications, donations, letters) to the appropriate person for processing, and
- providing copy and assistance each quarter to the Bluebird editor.

This list is not complete, but includes the most of the major tasks.

We have approximately 10 Board conference calls a year—in September we have the Annual meeting and in December we generally do not hold a call. Most calls last an hour or so. What we talk about in these meetings is not rocket science or anything requiring special skills in any sense of the word. We talk about how NABS can best serve the interests of bluebirds, our Affiliates, and our members. Like all boards, we occasionally have minor conflicts—bluebirders, after all, tend to be a passionate bunch. But we try to keep our calls friendly, collegial, and cooperative. We invite discussion, and then decide things by majority vote and move on. We are always looking for the new ideas/programs/policies that will benefit our Society and best serve bluebirds and other small cavity-nesting birds.

In addition to the Board we have the NABS committees:

- Finance committee (budgets, investments),
- Membership committee (maintaining the membership database, etc.),
- Grants committee (managing our grants program),
- Education committee (Fact sheets, DVDs, From the President

Bernie Daniel
education grants),
• Journal advisory committee (working with the editor to produce outstanding issues of *Bluebird*),
• Affiliates committee (working with our Affiliates),
• Development committee (looking ahead/planning NABS’s future),
• Hotline committee (answering calls for help/advice from bluebirders),
• Website (http://www.nabluebirdsociety.org/) committee,
• Facebook (www.facebook.com/NorthAmericanBluebirdSociety) committee, and
• Board member nominating committee.

Committees are where most of the critical work of NABS gets done!

**Any NABS member** can serve on these committees. Does any of this seem important, interesting, and perhaps rewarding to you? Are YOU one of our many members who could step up and help out on the Board or the committees?

No one except the Bluebird editor and the webmaster is getting paid in NABS. Our organization continues to function almost solely due to the volunteer efforts of our Board and Officers. It follows therefore, and this is the important part, **NABS will cease to exist, at least in the format we know now, without the volunteer efforts and leadership of the Board and the Committees.** I don’t think I can state this any more clearly than that.

NABS exists to help cavity nesters, but IT IS NOTHING WITHOUT PEOPLE. WE NEED YOUR HELP! Serving NABS is definitely not a full-time job. But it does involve putting aside a few hours of free time to do work on NABS needs/concerns. None of the Board, Officers, or Committee members begrudge giving a little time to NABS. For one thing working on NABS issues is rewarding and, in my opinion, it’s even fun. But the “fun” part presupposes that there will be enough individuals available to **share the load** so it does not become a set of “burdensome obligations” instead of a “labor of love.”

Board members are nominated and elected each year. We are always interested in hearing from members interested in serving on the Board. ANY NABS member can serve on our committees!! I know many of you have skills in many of the areas I mentioned above. We would love to hear from you and would certainly appreciate your help. Take a look at page 4 in this issue of Bluebird. Which individuals do you guess are serving on most of the NABS committees right now? Did you guess it is mostly the NABS Board and Officers? If so, good guess!! All of these individuals have been talking to each other for a long time now! I know there are some great NEW ideas out there in our membership. We need YOU to share your thoughts, expertise, and talents with us on NABS committees. I certainly believe that it is a great way to help bluebirds!

In addition, volunteering is proven to be good for YOU. It offers opportunities for personal growth and learning new skills; meeting new people, making new friends, and being part of a team. And there is an added bonus—Edward Brown, author of *The Healing Power of Service*, says, “People who do volunteer work are much less likely to suffer illness.” By giving your time and skills, you can be an agent of change, and enable non-profit organizations like NABS to invest our limited funds directly into achieving our mission.

Bottom line, NABS cannot continue like this with so few members participating in the operations. Some of our Board members have been serving for a decade or more—some officers for more than 6 years. Believe it or not, none of us will live forever. **We need a new generation of NABS leaders in the pipeline, and we cannot continue to ignore this issue.** So PLEASE consider contacting us and volunteering a little of your time and talent to NABS. (contact: bdbrian@cinci.rr.com)

**Different topic. In this issue, I discuss the status and trends for the Mountain Bluebird. This is the third and final installment of the series covering all three species. I hope this winter to be able to find time to look into how the ranges for the three bluebird species have expanded or contracted over the last 50 years of the North American Breeding Bird Survey.**
In addition, I would like to start looking at the bluebird distributions in the winter season using the Christmas Bird Count data. As always, your comments and thoughts on these articles are appreciated.

Also we have been talking about the idea of NABS awarding grants in education and conservation as well as research. In this issue you will find an RFP for our new NABS Joseph A. Kujanik Education Grants program. We are excited about this new addition to NABS’s outreach efforts and are pleased to be honoring Joseph’s memory with it. If you are a bluebirder with camera/writing skills take a look at these new RFPs!!!

Stay warm and keep heart—only 130 days until March 20, 2019—the first day of Spring!

– Bernie

Bernie Daniel with one of his Ohiowood boxes.

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### Officials of the North American Bluebird Society, Inc.

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**2019 NABS Joseph A. Kujanik Education Grant Program – Request for Proposals**

In honor of the memory of Joseph A. Kujanik, NABS announces this Request for Proposals for plans to create a two chick Growth Atlases: one for the Western Bluebird and the other for the Eastern Bluebird. These atlases should be designed to assist bluebirders in determining the exact age of their chicks in the field. Such information is very important in cases of fostering orphaned chicks or for coordinating with bird banders.

The Growth Atlas should be modeled after the Growth Atlas found in the *Mountain Bluebird Trail Monitoring Guide* by Myrna Pearman. The Atlas will consist of two clear high-resolution digital images: (1) the whole clutch (from above), and (2) a single chick in hand (ideally the same chick) on each day from hatching to fledge. The first images should be obtained as soon after hatch as possible and will be labeled as “Day 0” or “Hatch Day.” The images taken 24 hours (+/− 30 minutes) after “Day 0” will be labeled “Day 1,” 48 hours (+/− 30 minutes) later “Day 2,” and so forth until fledging (circa “Day16”). Below is a subset of the images in the aforementioned Mountain Bluebird Growth Atlas to be used as an example.

The RFP shall include several items:
1. An indication that the photographer is an experienced bluebirder or will be working with an experienced bluebirder to insure safe chick handling procedures.
2. A brief narrative relating to the photographer’s past experience with wildlife photography.
3. A description of the equipment to be used for collecting the images (jpg).
5. A time line for the project completion and submission of the final product.
6. A proposed budget.

The final Growth Atlas produced shall be considered property of NABS to use as it sees fit for bluebird education and other purposes. The proposal should not exceed 5 pages total and should be submitted as a PDF (or MS Word document). Proposals will be judged by the NABS Education Committee and awards made by the NABS Board of Directors. Please send the proposal to bdaniel@cinci.rr.com before March 15, 2019. Awards will be made by April 15, 2019.

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**Vehicle/Property Donation Program**

If you have a car, truck, motorcycle, RV, boat, or even an airplane that you no longer need, NABS would like to receive it as a tax-deductible charitable donation.

To donate, simply call this toll-free number: 866-244-8464. Our agents will have your vehicle, boat, RV, etc. picked up and taken to a facility where it will be evaluated by experts. A determination will be made regarding what should be done to maximize its selling price, thereby resulting in significantly higher value than it might otherwise generate so you will receive the maximum tax benefit allowable by U.S. law. For tax purposes you, the donor, will receive a formal Certificate of Donation complying with all State and Federal requirements for authenticating your donation to NABS, an IRS 501(c)(3) tax-exempt charity.

Thank you for supporting the conservation of bluebirds and other native cavity nesters!

www.nabluebirdsociety.org

Winter 2018–2019 | Bluebird
Thanks to both Kurt Hagemeister (Michigan Bluebird Society President) and charter/life member Mark Rabbe from Maryland for taking the time to make some very interesting comments on my Eastern Bluebird (EABL) article (Summer 2018 Bluebird) (see Kurt and Mark’s “Letters to Bluebird” in the Fall 2018 issue). I agree completely with Kurt’s general thesis — if indeed EABL population increases have slowed or halted as the BBS data suggest there is likely more than one cause for this trend. In fact, given the very large range of the EABL (approximately a third of North America; NA) I would be surprised if issues affecting the any bird populations are the same everywhere.

As Kurt notes, increasing House Wren (Troglodytes aedon; HOWR) populations could be an issue in some areas. Of course it is possible to do a detailed analysis of HOWR like for bluebirds and perhaps such a look at them is warranted? The HOWR is nearly as widely distributed across NA as the EABL (it is observed in 3007 out of 3758 BBS routes) and its population seems to be increasing at a rate of about 0.9% per year (0.6% per year in the USA; and 1.6% per year in Canada). So the HOWR population is increasing but not at a remarkable rate. Oddly enough in Michigan the HOWR population change has been decreasing (~0.9% per year) for the last decade? Why this is the case is unclear. It might indeed be interesting to compare EABL versus HOWR population changes by state/province level across the continent?

The suggestion that we look into the sizes of the EABL wintering populations is also something well worth considering. As Kurt points out we could also do an assessment of the Christmas Bird Count (CBC) data and try to get some idea whether the numbers of wintering EABL in the northern parts of their range is changing. The CBC data from its start in 1900 to present has been tabulated and is available for analysis like the BBS data so that suggestion is very “doable.” Now to find the time…

Of course these days there is much conversation about climate change on many things including bird migrations. No one doubts that there is climate change as it has been a constant feature on the earth for billions of years. Today’s discussions/debates center around what is driving the changes observed? Of course, I do not know for sure how much climate change has impacted bluebirds but let’s try applying some available data and some “seat of the pants logic” (of course this is always dangerous).

According to the National Aeronautics and Space Administration average global temperatures have increased by about 0.8°Celsius (1.4°Fahrenheit) since 1880. Two-thirds of this warming (i.e., 0.5°C or 0.9°F) has occurred since 1975 (recall the BBS started in 1966). Now consider that a recent (and massive) study from the University of Edinburgh looking back across 300 years of birding records collected on hundreds of avian species, which were located in five continents concluded that birds migrate approximately 1 day earlier for each rise of 1°C. By this rule of thumb, since temperatures have risen less than one degree over the last 50 years, birds could therefore be expected to be migrating, on average, less than one day earlier. Thus I would suggest that any climate change effects on bluebird migration might well be too subtle (or small) to account for much of any population changes for bluebirds observed over the last half century in the BBS data? That said we cannot completely dismiss climate altogether as a factor. For example, we do know for certain that random year-to-year changes in winter weather can be a disaster for bluebird survival for example.

The impact of agricultural chemical (including both pesticides and fertilizers) is always very hard to assess because like other factors it varies greatly depending on what part of the EABL range we are considering. Clearly some pesticides like DDT did cause serious population declines some 4 decades ago for raptors for example. But consistent or persistent impacts of other agricultural chemicals are less well documented. Over the last 30 years there has been a lot of effort and scientific research devoted to creating “safer” pesticides for use in agriculture. For example, broad scope, indiscriminate insecticides such as organophosphates (which are neurotoxins and inhibit key enzymes involved in neural transmission for vertebrates as well as insects) have been legislated out of many applications. These chemicals have been replaced with newer generation pesticides like the neonicotinoids which kill insects but are generally a lot less toxic to vertebrates such as mammals and birds. Thus, we can hope at least that, in the main, the impacts of agricultural chemicals on EABL should be decreasing across the continent. However it could be added here that all insecticides, by definition, kill insects which are a *sine qua non* for successful bluebird...
reproduction. Given the recent world-wide declines documented for insect populations we cannot rule out looking at all factors that impact insect availability.

Both Mark and Kurt suggest that it is likely that things would be much worse for all three species of bluebirds as well as other native cavity-nesting species were it not for organizations like the NABS, the Maryland and Michigan Bluebird Societies as well as all of our other Affiliates across NA. Mark points to the strong and rapid recovery of bluebirds following the very cold/ice & snow covered winters of 1976–1978 as proof of this. Everyone should read Mark’s paragraph on the events and excitement surrounding the birth of NABS. Likewise if our societies were to go away from lack of interest things would rapidly get worse for bluebirds and other cavity-nesting species.

And I agree their sentiments that today we are fortunate to have many sources of good scientific data (e.g., like the BBS and CBC) as well as new tools (e.g., geo-trackers) for examining trends in birds. It is important that we take advantage of these tools to stay on top of trends in bluebird populations.

Bernie Daniel, Ph.D.

Lots to Like on Facebook!
Great friends, great photos, great videos, and great information are all waiting for you on the NABS Facebook page. Stay connected with NABS members and other bluebird enthusiasts at www.facebook.com/NorthAmericanBluebirdSociety

Save the date: March 12-15, 2020!
Join bluebird friends for the migration to the 2020 North American Bluebird Society Conference in Kearney, Nebraska.

This exciting and educational event is being hosted by

Speakers:
Al Batt - Hartland, MN
Bernie Daniel - Cincinnati, OH
Myrna Pearman - Red Deer, Alberta, CA
Stan Tekiela - Eden Prairie, MN
Julie Zickefoose - Whipple, OH
Sandhill Crane - speaker TBD

Activities (more to come):
Sandhill Crane Viewing Blinds, Prairie Chicken Leks Viewing & Rainwater Basin Waterfowl Viewing Areas
Prairie Culture Tour, Workshops, Exhibits, Silent Auction, Raffle and time to socialize with birding friends.
This past summer, an unusual story unfolded inside one of our bluebird boxes. On May 20, a Mountain Bluebird couple had built a nest in box S6 on Waterworks Hill (Missoula, Montana) and laid one egg. Then the couple disappeared. One or both of them may have been eaten by a Cooper’s Hawk that I saw in the area at that time.

A Tree Swallow couple swooped in and took over the box. By June 3, they had produced seven eggs of their own, in addition to the abandoned bluebird egg. The adopted bluebird egg HATCHED! By June 21, the nest contained four Tree Swallow nestlings and one Mountain Bluebird nestling.

The Tree Swallow couple worked hard to feed their brood. All nestlings grew well with the bluebird out-stripping his foster nestlings in size. On June 26, biologist Vicki Morgan banded the little bluebird and determined him to be male. She also reported that all nestlings were fat and healthy. In early July, the five little birds fledged. We don’t know the fate of “our” fostered bluebird or his four Tree Swallow siblings, but we hope he will survive and return to Waterworks Hill next summer.

All photos by Vicki Morgan.
Two Broods of Tree Swallows in One Nest
Don Stiles and Bill Taylor

In 2014, while checking his Red Deer Lake nestbox trail southwest of Calgary, Alberta, Canada, Don Stiles found a nest of Tree Swallows with 12 young, which included two broods. The most common number of Tree Swallows in a single brood is six. Documentation follows showing the progress of the nesting season with a photo for each monitoring (except for the first time on June 11).

June 11: 14 eggs; banded two females, 2591-80370 (a brown bird) and 2591-80371 (a brightly colored bird). The brown bird would have been a one-year-old bird and the brightly colored bird an older bird. It was checked for a brood patch to make sure it wasn’t a male (Tree Swallow females lose their brown color as they get older).

Examination of the box on July 18 indicated that all young had fledged successfully at about 20 days of age—no dead young left behind.

June 21, about 5 PM: 11 eggs, 2 newly hatched young.

June 25: Many small young, 3 days old. Two birds flew from nest (2 females?). Note the prominent black feather in the lower left corner in first three photos.

July 5, about 8:30 AM: 12 young, 13 days old. The young were banded at this time: 2521-69375 to 69386. Note the long wing in the center of the box. This is the older adult female, 2591-80371, who was hiding among the young. The young now completely fill the box so no nesting material can be seen.

June 22, about 7 AM: 3 eggs, many newly hatched young, indicating most had hatched overnight.

This is a relatively rare phenomenon. Don Stiles noted 12 young Tree Swallows once before in a box on his East Didsbury bluebird trail on July 1, 1982. He and his son Andrew have been monitoring nestboxes since 1977. Occasionally over the years other monitors have reported double broods in a single box.

A record double-brood nest of Tree Swallows was found on July 13, 2018, when Bill Taylor banded 13 healthy Tree Swallows in his box 232 southwest of Longview. There were several adults flying overhead. The young were all well. There appeared to be two groups, judging by age—about half were 14 days old, the rest 12 days. Unfortunately, the young fledged before a picture could be taken.

Don Stiles and Bill Taylor are members of the Calgary Area Nestbox Monitors Society.

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June 21, about 5 PM: 11 eggs, 2 newly hatched young.

June 25: Many small young, 3 days old. Two birds flew from nest (2 females?). Note the prominent black feather in the lower left corner in first three photos.

July 5, about 8:30 AM: 12 young, 13 days old. The young were banded at this time: 2521-69375 to 69386. Note the long wing in the center of the box. This is the older adult female, 2591-80371, who was hiding among the young. The young now completely fill the box so no nesting material can be seen.

Don Stiles and Bill Taylor are members of the Calgary Area Nestbox Monitors Society.
Is Your Backyard Bluebird Nestbox a Tragedy in the Making?

Susan Bulger and Gillian Martin

Is the lawn-loving, urban-friendly bluebird visiting your yard to forage for insects or seek a tree cavity in which to nest? Installing a nestbox can be beneficial and a source of much entertainment. But problems can develop when proven methods of helping them are not followed. Emergency calls received by NABS and its 58 state-wide Affiliates leave experts to believe that millions of people who provide nestboxes for bluebirds do more harm than good. Here’s what you need to know.

The Right Box in the Right Place is Key
A safe box for bluebirds is about 10 inches tall with an inside floor dimension of 5 inches by 5 inches. The wood should be about ¾-inch thick and the hole should be 1½ or 1⁹/₁₆ inches in diameter. It should have a door that opens for easy cleaning and have no perching post. A good source of nestbox plans is Fred Stille’s website: www.nestboxbuilder.com.

Small, thin, decorative birdhouses that do not have a door that opens, are placed low to the ground, and in direct sunlight, can lead to tragedy. If these unsuitable boxes must be placed in the landscape, it’s best to remove the bottom or plug the holes to prevent them from being used by birds. Did you know that native House Wrens commonly occupy decorative boxes? Their highly territorial aggression during the nesting season is often deadly to other nesting songbirds. Placing bluebird boxes in House Wren habitat can set the former up for failure.

Two Nonnative Birds Harm Bluebirds
The European Starling is less of a problem when the right box design is used because the starling is too large to fit through the recommended size

Decorative boxes near bluebird nestboxes can spell tragedy.

Male Western Bluebird using one suitable box design.

A pair of breeding bluebirds needs about 2 acres of low grass. If your lawn and those nearby collectively provide approximately that amount, bluebirds have a good chance of successfully breeding.

House Wrens take over boxes and may kill bluebirds nesting nearby. Photo by Sandrine Biziaux Scherson
hole. The second bird, the House Sparrow, easily fits the size hole needed by bluebirds. Sadly, it often kills bluebirds or destroys their eggs. Birdhouses for bluebirds should not be used if House Sparrows reside nearby.

**Outdoor Cats and Nestboxes are a Deadly Combination**
Cats are not native American wildlife and native birds have not evolved with these excellent predators. Millions of birds are killed annually by cats. Locations where feral or pet cats roam are no place for a nestbox. If a parent bird is killed, some chicks will likely die because a single parent cannot feed a full clutch. Baby birds just out of the box and learning to fly are especially vulnerable to cats.

Shaded Locations Can Be Life Savers
In areas where spring and summer temperatures can get very high, it is important to place the box in a well-shaded area because the internal temperature of the box can be substantially higher. Prolonged high temperatures can affect the health of parents and kill nestlings. Side-ventilation holes are beneficial. Painting boxes a light color to reflect heat is also recommended.

Busy Feeders near Nestboxes are Risky
Having a nestbox in your yard while also enticing as many birds as possible with seed, mealworms, nectar, suet, bread, etc. increases stress for the nesting bluebirds. This is especially so if your yard is small and the feeder is nearby. (House Sparrows are shown here.) Feeders also draw snakes, rodents, and hawks. “Intruders” and potential predators require parents to divert a lot of energy to defend their nesting area. It is safest to have no feeders if nestboxes are present, but if you feed birds in the nesting season (generally February through August), consider using niger and safflower seeds. They do not appeal to House Sparrows. Mealworms can be offered exclusively to bluebirds if safely done.

Be Aware of Other Dangers
These include all kinds of string, frayed blue tarps, ribbon, Easter grass, and yarn. When birds weave these materials into their nest, strangulation or trapping can occur. Raccoons and snakes are frequent predators in many places and methods to deter them are necessary to bird survival in nestboxes. Likewise Argentine and fire ants are widespread and must be kept out of boxes because they also kill birds. Other

Most birds killed by cats are not discovered.  
*Photo by Hilde Gay*

Use ventilation holes and light-colored paint in hot regions.

Bird feeders near nest boxes add stress and draw predators. *Photo by Sue Robinson*
dangers include chimneys and vertical pipes. When the latter are 1–10 inches in diameter they attract songbirds looking for a cavity. The straight, smooth sides of the pipe trap birds. Options include removing the pipe, capping, screening, or filling them with dirt, rocks, or concrete.

Explore these websites for suggestions for predator guards and other resources for nestbox owners:
www.socalbluebirds.org
www.sialis.org
www.nabluebirdsociety.org

If a bird is injured or a baby bird has fallen from the box find a certified wildlife rehabilitation center that works with songbirds:
https://wildliferehabinfo.org/ContactList_MnPg.htm

**More Ways You Can Help Bluebirds**

Did you know you can also help bluebirds by volunteering to monitor an existing trail of boxes that is already used by bluebirds? Bluebird societies frequently need to fill the shoes of retiring monitors. These trails are usually in highly suitable habitats, which ensure greater breeding success long term.

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Grubco’s bluebird feeders are available in two versions; cedar and recycled plastic. Keep any unwanted birds out. The holes are sized and located specifically for bluebirds. Whichever feeder you decide to use, you will join thousands of happy bluebird feeder users.
During my first year of monitoring a nestbox trail in the Great Swamp National Wildlife Refuge in New Jersey, I was surprised to open a bluebird box one spring and gaze into the eyes of an attractive small mammal as shown in Figure 1. I had never before seen this animal. The startled rodent left the box and glided to a nearby tree. It was obviously a flying squirrel.

The southern flying squirrel (*Glaucomys volans*) is a common resident of deciduous forests throughout eastern North America from southern Canada to Florida. The northern flying squirrel (*Glaucomys sabrinus*) is the other native flying squirrel. It is found in coniferous and mixed coniferous forests across the top of North America. Flying squirrels are seldom seen because they are exclusively nocturnal. They usually roost and nest in natural or woodpecker-made tree cavities. Occasionally in the Refuge they nest and roost in bluebird boxes but more often in Wood Duck boxes that are inside the tree line. Flying squirrels can glide from trees to many of the duck boxes. Bluebird boxes are typically located on posts in open areas and are difficult for flying squirrels to access. In suburban areas bird boxes attached to trees, or holes in attics, are attractive to flying squirrels. I have a nestbox attached to a white pine in my yard; it has been used as a nest by these squirrels for a number of years.

The squirrel in Figure 2 was disturbed as the box was opened for the annual winter inspection and cleaning. Flying squirrels are known to congregate to keep warm. It was a cold day and a group of six squirrels had gathered in the box. It was fascinating to watch while one by one they exited the entrance hole and glided to a nearby tree seemingly without the loss of altitude.

The portrait of a flying squirrel in Figure 3 shows its large eyes and whiskers. Both are very useful adaptations for their nocturnal lifestyle. Flying squirrels don’t fly but they are excellent gliders. They have soft, light, flat tails and can flatten their bodies into a rectangular shape by extending membranes that stretch from the equivalent of their wrists to their ankles. The dark line along their side marks the outer

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**Figure 1.** Flying squirrel in bluebird nestbox.  
**Figure 2.** Flying squirrel about to exit Wood Duck nestbox.  
**Figure 3.** Flying squirrel atop a Wood Duck nestbox.
extent of the membrane. The tail is used for balance and braking as they land. They can leap and glide impressive distances.

Flying squirrels are about the same size and weight as the eastern chipmunk (*Tamias striatus*) shown in Figure 4. Both are less than 12 inches long including their tails. Flying squirrels have also been called flying mice, which is the English translation of their Latin name.

Southern flying squirrels feed on fruit and nuts from oak, hickory and beech trees. Large caches of pin and red oak acorns that were stored by flying squirrels for winter consumption are found on occasion during the annual inspection and cleaning of Wood Duck boxes. The flying squirrels also feed on insects, buds, flowers, mushrooms, carrion, bird eggs, and nestlings. Flying squirrels not only prey on birds but are also prey items for birds. Owls, hawks, snakes, raccoons and other predators including domestic house cats might include flying squirrels in their diet. Flying squirrel remains are found in Wood Duck boxes used by Eastern Screech-Owls (*Otus asio*) during the winter. The owls do not consume the tail.

Most nests of flying squirrels in the Refuge are made of strippable bark. Red cedar is common and is the bark of choice in the Refuge. The tree commonly called a red cedar in the Refuge is actually a Virginia juniper. White cedar is the only native cedar in New Jersey. It is the preferable nesting material of flying squirrels. White cedars are being reintroduced into the Refuge. In time the white cedar bark should become the primary nesting material as it contains insecticidal oils that provide some protection for the young squirrels. As shown in Figure 1 the adult squirrel can make a covered nest with the strips of bark.

Flying squirrels raise two litters of two to seven young per year. The young (Figure 5) are born without fur and with closed eyes and ears. They are mobile in five weeks. Parents leave their young after nine weeks. Young squirrels become independent after four months.

The average range of an adult female is about 15 acres while the male has a larger range of about 40 acres. The ranges of individuals overlap those of their neighbors.

If you’re monitoring nestboxes anywhere within the range of these two flying squirrel species, watch for them in your boxes!

**Fun Facts about Flying Squirrels**
- Flying squirrels can glide for 150 feet or more in a single “flight”
- Using their tail as a rudder, they can execute 180° turns in flight
- There are more than 40 species of flying squirrels worldwide, including North America’s two species
- Cartoon heroes Rocky and Bullwinkle live in the fictional town of Frostbite Falls, Minnesota; both northern and southern flying squirrels live in Minnesota, so we can never be sure which species Rocky belongs to
My Woolwine House Bluebird Trail in Patrick County, Virginia, now in its 10th year of operations, had a late but very odd nesting. There was a first nesting that fledged five Eastern Bluebird young on May 11. The rest of the summer yielded no second nesting at this nestbox. Then, lo and behold, a new nest was built with a first egg laid on July 27. The egg clutch of four had three malformed eggs—with the strangest looking like an oversized kidney bean or one large piece of elbow macaroni! The other three eggs were misshaped—not the rounded oval shapes we monitors are accustomed to viewing on the nest.

Since I submit my trail data to Cornell NestWatch, I decided to contact the project managers about my finding. They were highly interested and chose to publish this odd clutch in their August eNewsletter online. The consensus by NestWatch was the laying female bluebird must have been experiencing some environmental stresses or nutritional deficiencies.

On August 13, the first egg hatched—not the kidney bean egg. That hatching died within a day, and the parent birds removed the deceased. Then egg number 2, a slightly misshapen egg, hatched. The hatchling looked weak to me, but I kept up hope! At that point, it was clear that I needed to check this nest every other day to get updates and keep NestWatch up to date.

Later, NestWatch contacted Dr. Mark Hauber, author of The Book of Eggs: A Life-Size Guide to the Eggs of Six Hundred of the World’s Bird Species, about what could have caused this. Dr. Hauber told them, “It looks like the female laid the eggs too fast without the shell being fully formed—I would suspect that these eggs are incredibly thin. They are incredible eggs indeed!”

I kept a photo journal for this unusual event. Two eggs did not hatch, but the sole surviving nestling did indeed make it! I candled and then dissected the two unhatched eggs remaining; one had a developing yolk (not a double yolk) and the other was clear fluid, which means it was unfertilized. The sole surviving nestling fledged on August 30. Of course, this was a celebration!

Advice I always give monitors—do not underestimate our bluebirds—keep checking your nestboxes through the month of August. You may find late nesters. Every year on my 50-nestbox trail I find at least three late nests, and it never gets old or tiring for me to keep monitoring the trail, even in August. My latest fledging ever was September 6. This year, I feel I hit the jackpot with this odd egg clutch. I celebrated once again one sole surviving fledging. Both parent birds remained present during this nesting cycle and kept diligent in guarding the nest and at Fledge Day, which was on Day 17.

For those interested in the August NestWatch article online, you can read it here: https://nestwatch.org/connect/news/nestwatcher-spots-odd-eggs-in-bluebird-nest/

Christine Boran is a Certified Master Naturalist and a board member and County Coordinator for the Virginia Bluebird Society. She documents her Bluebird Trail at https://www.facebook.com/WoolwineHouseBluebirdTrail/
Filling Tree Cavities May Mean Additional Habitat Loss for Bluebirds

Gillian Martin

The Center for Integrated Pest Management of the Environmental Protection Agency has issued a recommendation to reduce mosquito-breeding habitat. It is to fill tree cavities that retain water with expandable foam. EPA’s Marcia Anderson Ph.D. explains “the goal is to reduce the number of mosquitoes and the diseases they spread.”

This recommendation was recently directed at tree care providers in an article in the August 2018 issue of Tree Care Industry Magazine. Unfortunately, it did so without emphasizing consideration of level of mosquito risk by region, and without suggesting that arborists and property managers also consider the value of tree cavities to wildlife. We all agree that protecting human health is paramount, and balancing wildlife and human needs is an ongoing challenge.

It is of concern to me that tree care providers and property managers without an understanding of the value of cavities to wildlife, may apply this recommendation with a broader brush than necessary. Will they also consider filling cavities proactively as a means of preventing water from entering them in the first place? Filling cavities is already practiced for other reasons debated by the tree care industry. These actions could compound the steady loss of available cavities that is already a consequence of human intolerance of dead trees in the urban and suburban landscape.

Please be aware of this policy and remain watchful for its application in your region. And please be ever watchful for opportunities to advocate for the safe retention of suitable dead trees, particularly those with existing cavities. Wildlife tree signs are educational and are available at http://cavityconservation.com/nature-store-2/

The long-term goal of conservation efforts for cavity nesting birds should be to increase their natural habitat as opposed to increasing their dependence on artificial cavities. Sustainable practices support not just bluebirds and other cavity dwelling species. They enhance the habitat value of our urban forests.

Gillian Martin is active in the Southern California Bluebird Club and is director of its Cavity Conservation Initiative (http://cavityconservation.com).
Remembering Dorene Scriven: Conservationist and Friend of Bluebirds

Carrol Henderson

Editor’s note: Dorene Scriven passed away on June 25, 2018.

On October 2, 2018, I retired from the Minnesota Department of Natural Resources after serving as supervisor of the statewide Nongame Wildlife Program for 43 of 45 years. Those years have left me with many fond memories of my friendships with dedicated conservationists who have made a dramatic difference in helping restore the state’s nongame wildlife populations—like Eastern Bluebirds, Trumpeter Swans, Peregrine Falcons, and Bald Eagles.

All of these species were absent from the landscape when I grew up on a farm in central Iowa in the 1950s. I never saw a bluebird on our farm. When I was hired as the Nongame Wildlife Program supervisor for the Minnesota DNR in 1977, it opened a whole world of new visions and opportunities for those species that had long been neglected among game managers and state conservation agencies.

The bluebird became one of the first beneficiaries of this new state program, thanks primarily to the vision, dedication, and persistence of bluebird advocates Dorene Scriven and Dick Peterson. Dorene and Dick were quick to contact me after my appointment and ask how we could bring back the bluebirds. Dorene represented the Audubon Chapter of Minneapolis. Then she became the first chair of their Bluebird Recovery Committee in 1981. Benefiting from Dick Peterson’s years of research and experience attracting bluebirds, Dorene and Dick looked to me for support from the new Nongame Wildlife Program to expand their passion for bluebirds statewide. It was a wonderful partnership that lasted for many years. With Dick’s vast collection of outstanding bluebird photos and knowledge of bluebird nestbox management and Dorene’s passion for bluebirds and organizational abilities, Minnesota’s bluebird bandwagon was rolling!

I used Dick’s bluebird photos for promoting bluebird conservation and to create a slide program that could be presented at workshops across the state. Dorene channeled these efforts through the Audubon Society of Minneapolis into the Bluebird Recovery Committee. That attracted fellow partners in bluebird conservation including Dave and Jan Ahlgren, Mary Ellen Vetter, Dick and Marlys Hjort, John Thompson, Dick Eide, Steve Gilbertson, and Gerhard Alexis, among others.

Their contagious interest in bluebirds quickly spread across state lines as Delores and Ernie Wendt became coordinators in Wisconsin, Rita Efta coordinated promotion of bluebird conservation in Iowa, and Steve Eno promoted similar efforts in Nebraska. This wasn’t just about Minnesota bluebirds. It was about bluebirds everywhere! Dorene was incredibly giving in her dedication. She answered over 5,000 inquiries about helping bluebirds in all 48 continental states and four foreign countries during her years as chair of the Bluebird Recovery Committee from 1981 through 1987. The membership in Minnesota’s BRC eventually reached 1,300 members.

An important part of this success story is that Dorene authored two important books on bluebirds and on successful bluebird trail management. Bluebirds in the Upper Midwest: A Guide to Successful Trail Management was published in 1989 with funding from the DNR Nongame Wildlife Program. When that book was sold out, she wrote an updated sequel in 1993: Bluebird Trails: A Guide to Success. It sold out in three editions through 1999.

Dorene’s stature in the national bluebird community grew throughout those years. She managed over 100 bluebird nestboxes on her property adjacent to Lake Maria State Park in central Minnesota, so she was well versed on the basics of bluebird conservation, nestbox management, and bluebird trail management. She became a member of the Board of Directors for NABS, and served on their Bluebird Advisory Committee and their Technical Advisory Committee.

Minnesota’s bluebird recovery effort took a giant step forward in 1983 when the Nongame Wildlife Program hired Dave Ahlgren to cut out 600 Peterson bluebird houses for distribution to the six regional DNR Nongame Program Biologists so they could collaborate with the Bluebird Recovery Committee members with “hands-on” workshops at Bemidji, Mankato, Willmar, Brainerd, Grand Rapids, and other locations.
Carpenter Nature Center, and the Minnesota Zoo. The effort was a huge success with about 500 participants learning how to attract bluebirds.

A letter that Dorene received in February of 1984 captured the secret of her success with bluebird conservation—the infectious enthusiasm fostered by the success of attracting bluebirds creates a “multiplier effect” that rapidly spreads among youth groups, conservation clubs, farmers, and landowners. The letter was from a farm wife named Sharon Possin in southeastern Minnesota near the town of New Richland. Sharon’s story began when her son Brent placed five bluebird houses on their farm as a 4-H project. When Brent attracted his first pair of Eastern Bluebirds, Sharon wrote that it was the beginning of an “Exciting New Adventure....”

Every visitor to the farm that year was taken out to see “their” bluebirds. The next year all nine of the families in their 4-H club decided to make helping bluebirds their club conservation project. Brent increased the bluebird nestboxes on their farm from 5 to 12.

Bluebird conservation also opened the door for broader support for wildlife conservation in the Possin family. They developed “wildlife habitat” for a woodlot on their farm and added Wood Duck houses, wren houses, and Purple Martin houses to their property. They also added several feeders for birds.

Sharon talked to a retired farmer at their county fair after he had watched Brent’s 4-H demonstration on bluebirds. Later she learned that he had built 20 bluebird nestboxes for his farm.

All of this incredible “multiplier effect” occurred because of one nest of bluebirds. That multiplier effect began taking place not just in the Possin neighborhood, but throughout Minnesota. People were discovering the magic that bluebirds brought to their lives.

Dorene was the catalyst whose boundless dedication, patience, and energy brought that bluebird “multiplier effect” to Minnesota—and it actually spread nationwide. One thing I still remember about Dorene is that when she sent out the annual Bluebird Directory, she always penned a short note to the member to personalize the report for each participant. It was an honor to spend so many pleasant evenings at Dorene’s home in the following years with our pioneering Bluebird Recovery Committee members. It was a delightful experience to share the enthusiasm and hear the stories of our members, including those of Dick Peterson who retained a wonderful childlike enthusiasm for bluebirds throughout his life.

However, it was Dorene’s challenge to channel our collective enthusiasm at those meetings to keep our agendas on track for our many projects, annual report preparation, workshops, and annual conference planning.

From 1986 through 2000, the number of bluebirds reported fledged by the 400–500 people who annually reported their results was nothing short of awesome—averaging about 15,500 chicks per year. Over a 20-year period, that would suggest over 300,000 bluebirds were fledged!! This is where another aspect of the multiplier effect comes in.

I suspect that of all those bluebird enthusiasts who were reached by Dorene’s conservation efforts, perhaps no more than 10% actually sent in reports to the Bluebird Recovery Committee. The rest simply enjoyed the birds, but without doing any paperwork. The cumulative number of bluebirds that may have been produced as a result of the Minnesota Bluebird Recovery effort from 1980 through 2000 could have approached two to three million!!! What an incredible impact!!! And that does not even include huge incidental benefits for other cavity-nesting birds like chickadees and Tree Swallows.

Over the years I also got to enjoy another dimension of Dorene’s life. She was an intrepid adventurer and enthusiastic international birder. She accompanied
my wife Ethelle and me on eight international birding trips beginning in 1987. We traveled to Costa Rica, Trinidad, Tobago, Venezuela, and Belize. Her daughters Terry Ann and Ellen accompanied Dorene on some of those trips. In 2005 Ellen and husband Skip joined Dorene for a memorable trip with us to Costa Rica. We shared exciting sightings of Resplendent Quetzals and humpback whales in Costa Rica, oilbirds in Trinidad, tropicbirds in Tobago, Scarlet Ibises in Venezuela, and Ocellated Turkeys in Belize. Dorene had a sincere concern and appreciation for birds throughout the Americas—from toucans, parrots, and hummingbirds in the tropics to birds back home like chickadees, cardinals, and of course bluebirds.

Dorene will certainly be missed, but we can all find consolation from the lifelong legacy she created among thousands of citizens in Minnesota and beyond for caring about bluebirds and other wildlife. Her untiring efforts are an extraordinary example of her life as a conservation leader and an inspiration for environmental stewardship.

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**Photo Gallery**

Photographer N. Lewis of Shenandoah National Park in Virginia snapped this image of a female Eastern Bluebird gorging on berries a few winters ago. Elderberries?

https://www.flickr.com/photos/snpphotos/

Public domain.

Emilie Chen found this group of Western Bluebirds taking turns at a dripping faucet in the Angeles National Forest, in Southern California, this past November.

https://www.flickr.com/photos/emiliechenphoto/

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

–Julie Zickefoose
This paper, the third in the series, will examine the distributions and population trends for the Mountain Bluebird (*Sialia currucoides*; MOBL) using information from the North American Breeding Bird Survey (BBS) database. As noted before, a detailed description of the BBS protocol and database was covered in the first paper of this series that dealt with the Eastern Bluebird and that article in the Summer 2018 issue of *Bluebird* holds a discussion of that matter.

The MOBL is typically detected every spring on about 580 of the 3,520 BBS routes annually run and these routes are distributed across 13 states and 4 provinces (Figure 1).

By way of comparison the Western Bluebird (WEBL) is seen on only 296 routes while the Eastern Bluebird (EABL) is annually detected on 2,131 routes. In a future paper we will examine changes in the relative sizes of the three bluebird species’ ranges over the last half century of the BBS. It would be of interest, in my opinion, to find out if the more populous EABL was expanding into the range of the MOBL on the northern part at the western edge of its range and into the range of the WEBL on the southern part.

The MOBL is aptly named and much of its range lies in the higher elevations of western North America (NA), which are dominated by coniferous tree cover. The MOBL has been found breeding at elevations up to 12,000 feet (3,650 meters) above sea level. In Figure 2 the darker blue areas show the locations of the densest MOBL populations based on observations from the BBS. Clearly the stronghold of the MOBL is western Colorado and the contiguous areas in northeastern Utah and extreme southwestern Wyoming. This is an area dominated by ponderosa pine savannas, pinyon-juniper scrublands, and mountain meadows, which are found at the higher elevations. Other areas where WEBL are regularly found in higher numbers are the ponderosa pine/Black Hills spruce/quaking aspen–covered Black Hills in southwestern South Dakota (elevation 3,000–7,000 feet); the ponderosa pine/Engelmann spruce/Douglas fir–covered areas of the western Montana–eastern Idaho border (elevations 5,000–12,000 feet); the ponderosa and lodgepole pine/juniper covered regions of northeastern California and central Oregon (elevations 3,500–12,000 feet); in south-central

![Figure 1. This map shows the starting point (larger turquoise dots) of the ~580 BBS routes where Mountain Bluebirds are routinely detected in the annual June surveys. These routes are within the borders of 13 US states and 4 Canadian provinces. The smaller violet dots are additional BBS routes which are also counted annually but where MOBL are not detected. This map was created using BBS data within a QGIS program on the author’s computer.](image1)

![Figure 2. The distribution of MOBL in 17 states/provinces where they are detected based on data downloaded from the North American Breeding Bird Survey. The darker the blue color indicates higher densities of MOBL observed on the routes. For consistency and to be able to control the spatial scale this image was generated on the author’s computer with a QGIS Geographic Information System and using an Inverse Weighting algorithm.](image2)
Alberta (elevations 3,000–10,000 feet) and finally ponderosa and lodgepole pine/western larch/Douglas fir–covered areas of northeastern Washington and south-central British Columbia (elevations 3,000 to more than 12,000 feet). It is important to mention here that many range maps for the MOBL (e.g., field guides) indicate that it breeds in elevated landscapes considerably north of the territory surveyed by the BBS. For example, some maps indicate that the MOBL breeding range may extend as far north as central Alaska. It seems unlikely that these areas contain a significant proportion of the total MOBL population, however this is not known with certainty at this time.

Turning from the issue of distribution to trends, Figure 3 is a plot of the MOBL population changes for NA from 1968 to 2015. The BBS “Count Index” on the ordinate is a statistical surrogate for the average number of bluebirds observed per route over each year of the survey. Looking at this plot it is obvious that in the 22 years from the start of the survey in 1968 until about 1990 the MOBL population across its entire range appeared to be steadily decreasing. It would be interesting to get ideas from experienced bluebirders across the MOBL range as to what might have contributed to this persistent population decline during these years? Of course, there could have been, and perhaps likely was, more than one cause. However, from about 1991 until approximately 2005 the MOBL population fluctuated with the numbers increasing for short periods of time (e.g., 1992–1996) only to decrease again in the following years. For the last 10 years shown on the plot (i.e., 2005–2015) the MOBL population seems to be stable (see Figure 3) This pattern is a welcome change compared to the apparent population declines seen in the earlier decades of the survey.

The data presented in Table I is a tabular representation of the plotted data shown in Figure 3. This table presents a statistical analysis of MOBL population trends during two periods: over the entire time of the BBS (1968–2015, left hand three columns) and then over the last decade surveyed (2005–2015, right hand three columns). The results are broken out for the entire MOBL range in NA, and also the parts of the range within the US and Canada separately. Looking at the entire range and for the last decade shown the MOBL population trend indicates that the numbers are stable, i.e., not changing. The estimated average population trend over the entire MOBL range is −0.06% per year and this number is statistically indistinguishable from a zero trend or no change. The 95% confidence interval (95% C.I.) for the trend over

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of routes</th>
<th>1968 to 2015 trend (%)</th>
<th>1968 to 2015 confidence interval</th>
<th>2005 to 2015 trend (%)</th>
<th>2005 to 2015 confidence interval</th>
<th>Average number of birds per route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada***</td>
<td>203</td>
<td>−1.2</td>
<td>−2.67 to −0.07</td>
<td>−3.15</td>
<td>−6.25 to −0.32</td>
<td>1.12</td>
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<td>United States***</td>
<td>652</td>
<td>−0.42</td>
<td>−1.01 to 0.12</td>
<td>0.45</td>
<td>−0.56 to 1.48</td>
<td>3.7</td>
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<tr>
<td>North America***</td>
<td>855</td>
<td>−0.54</td>
<td>−1.11 to −0.05</td>
<td>−0.06</td>
<td>−1.06 to 0.94</td>
<td>2.75</td>
</tr>
</tbody>
</table>

*Indicates that trend estimates for that region are compromised by too few routes and lower route densities, or relatively small numbers of birds and therefore exhibit relatively large confidence intervals around the mean compared to estimates for regions marked by ***. The confidence interval is the range in which we are 95% certain that the real trend lies (all data is from the BBS website).

Figure 3. Mountain Bluebird population trends across its entire range in NA from the start of the BBS western survey (1968) until 2015. The “Count Index” is a relative measure of the average number of bluebirds detected in all surveys for each year. This plot is adapted from the BBS website. The solid lines are the 95% confidence intervals. The red line shows the trend over the last 10 years (2005–2015) of the survey.
that time period is essentially -1% to +1% change per year. Stated another way those numbers confirm that we can be quite confident is saying that from 2005 to 2015, based on the BBS, the continental population of MOBL has been stable. Since the majority of the MOBL range is within the United States (US) the MOBL population change numbers within that country are very similar to those seen for NA as a whole with a range of -0.6 to 1.5% per year (95% C.I.). In the Canadian regions of their range the MOBL population seems to be showing a definite decline (average -3.15% per year, 95% C.I. -.6.3 to -0.3%). Many of the areas that provide good MOBL habitat in Canada have been plagued with hot dry weather and widespread summer forest fires over the last decade. It seems reasonable to suggest that these are in part at least responsible for the apparent MOBL population declines across its Canadian range? In summary, over the past decade the MOBL population, over most of its range seems steady. However, that also means that the population is not growing significantly either (across the entire range).

The BBS data is also analyzed over many smaller areas of the continent including by physiographic regions or even by state/province. Table II shows the MOBL population trends observed in the various states/provinces where it is found over the same two time periods. It is not possible in this summary to discuss in detail all of the states where the bird is found but it can be seen from Table II that the MOBL population trends within the individual states/provinces vary considerably. It is noteworthy over the later time period (2000 – 2015) that MOBL populations seem to be decreasing in all four of the Canadian provinces in which they are routinely detected. Likewise, many of the states which appear to have areas of higher MOBL densities, namely Colorado, Utah, New Mexico, and South Dakota also have exhibited decreasing population trends over the past 10 years. However, the magnitude of these decreases varies greatly between the various states and also between the two time periods shown. Thus, the trend over the lifetime of the BBS in Colorado

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of routes</th>
<th>1968 to 2015 trend (%)</th>
<th>1968 to 2015 confidence interval</th>
<th>2005 to 2015 trend (%)</th>
<th>2005 to 2015 confidence interval</th>
<th>Average number of birds per route</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta***</td>
<td>80</td>
<td>-0.96</td>
<td>-2.9 to 0.75</td>
<td>-4.77</td>
<td>-9.56 to -0.54</td>
<td>0.98</td>
</tr>
<tr>
<td>Arizona***</td>
<td>27</td>
<td>-2.8</td>
<td>-5.2 to -0.42</td>
<td>-1.84</td>
<td>-5.36 to 2.45</td>
<td>4.07</td>
</tr>
<tr>
<td>British Columbia***</td>
<td>60</td>
<td>-0.02</td>
<td>-1.48 to 1.43</td>
<td>-0.8</td>
<td>-5.61 to 2.38</td>
<td>1.56</td>
</tr>
<tr>
<td>California**</td>
<td>54</td>
<td>2.19</td>
<td>0.51 to 3.87</td>
<td>4.92</td>
<td>0.91 to 10.64</td>
<td>0.43</td>
</tr>
<tr>
<td>Colorado***</td>
<td>103</td>
<td>0.37</td>
<td>-0.62 to 1.43</td>
<td>-0.51</td>
<td>-2.84 to 1.78</td>
<td>8.59</td>
</tr>
<tr>
<td>Idaho***</td>
<td>22</td>
<td>-4.9</td>
<td>-7.78 to -1.69</td>
<td>-1.72</td>
<td>-7.52 to 11.51</td>
<td>0.23</td>
</tr>
<tr>
<td>Manitoba**</td>
<td>56</td>
<td>3.41</td>
<td>2.31 to 4.53</td>
<td>3</td>
<td>-0.14 to 5.03</td>
<td>2.01</td>
</tr>
<tr>
<td>Montana***</td>
<td>18</td>
<td>0.24</td>
<td>-1.77 to 2.28</td>
<td>0.1</td>
<td>-4 to 3.84</td>
<td>1.9</td>
</tr>
<tr>
<td>Nevada***</td>
<td>40</td>
<td>-3.21</td>
<td>-4.49 to -1.84</td>
<td>-2.88</td>
<td>-5.63 to 0.53</td>
<td>9.5</td>
</tr>
<tr>
<td>New Mexico***</td>
<td>11</td>
<td>-0.49</td>
<td>-3.69 to 3.03</td>
<td>-0.33</td>
<td>-11.1 to 11.56</td>
<td>0.16</td>
</tr>
<tr>
<td>North Dakota**</td>
<td>74</td>
<td>-0.48</td>
<td>-1.59 to 0.59</td>
<td>0.16</td>
<td>-1.81 to 2.95</td>
<td>3.59</td>
</tr>
<tr>
<td>Saskatchewan***</td>
<td>41</td>
<td>-2.66</td>
<td>-5.67 to -0.14</td>
<td>-4.87</td>
<td>-12.28 to 2.94</td>
<td>1.1</td>
</tr>
<tr>
<td>South Dakota***</td>
<td>18</td>
<td>0</td>
<td>-1.98 to 2.25</td>
<td>-1.49</td>
<td>-7.69 to 4.24</td>
<td>2.17</td>
</tr>
<tr>
<td>Utah***</td>
<td>79</td>
<td>-0.34</td>
<td>-1.61 to 1</td>
<td>-1.35</td>
<td>-4.27 to 1.07</td>
<td>4.23</td>
</tr>
<tr>
<td>Washington***</td>
<td>28</td>
<td>2.87</td>
<td>-0.01 to 5.58</td>
<td>5.52</td>
<td>-0.2 to 13.17</td>
<td>0.95</td>
</tr>
<tr>
<td>Wyoming***</td>
<td>104</td>
<td>0.24</td>
<td>-0.95 to 1.52</td>
<td>1.83</td>
<td>-1.02 to 5.22</td>
<td>6.15</td>
</tr>
</tbody>
</table>

***Regions where data are reliable, i.e., >14 routes in region where birds are seen with good precision and abundance. **Regions with data of less reliability with either <1 bird per route, <14 routes with good precision and abundance or >3% change per year. *Regions with data of least reliability with either <0.1 bird per route, <5 routes with good precision and abundance or >5% change per year (all data is from the BBS website)
(1968–2015) indicates a slight gain in MOBL numbers of 0.37% per year with a range (i.e., 95% confidence interval) of −0.62% to 1.43% per year. But over the last decade (2000–2015) that trend seems to have turned to slightly negative (−0.5% per year; 95% C.I. −2.84% to 1.78% per year). Perhaps mountain bluebirders in that state could comment and compare on these observations with what they have seen on their trails? I believe it would be reasonable to suggest that these population changes seen in Colorado could also be described as stable (not changing), however it would be prudent to keep close watch on Colorado. This state is an important area for MOBL and the BBS observers are seeing, on average, 8.6 birds per route each year there. The case for New Mexico, another MOBL stronghold, is different. While BBS observers still see impressive numbers of MOBL on routes in New Mexico the population trend is clearly negative both time periods (see Table 2). Again it would be of interest to see how these observations from the spring surveys compare to the situation bluebirders are finding on the ground in New Mexico.

In contrast, some other states in the contiguous region e.g., Arizona, Nevada, and Wyoming, all show modestly increasing population trends. Likewise, some far west states also show moderate to strong increases for MOBL populations (e.g., Washington at 5.5% per year, California at 4.9% per year). But in another state nearby, Oregon, the MOBL population appears to be stable at 0.2% per year (95% C.I. −1.8 to 3) but not growing. North Central states also show moderate gains (e.g., Montana at 3% per year and Idaho at 2.4% per year).

In conclusion, it is not easy to detect a consistent regional pattern for MOBL population dynamics other than that the northern Canadian provinces and a few of the states in the southwestern US (e.g., the “Four Corners” area) have not been showing the same kinds of MOBL population growth that we are seeing in the more northern and western states. This is particularly the pattern seen over the last decade examined, an exception to that rule being the southwestern states of Nevada and Wyoming.

Trend plots for six of the individual states are shown in Figure 4 and these graphs provide the reader some visual perspective on the tabular data shown in Table 2. From this chart it can be seen that some states with significant MOBL populations, such as New Mexico and Oregon, present an obviously negative population trend for the last decade (compare to Table 2).

For other states/provinces with a negative trend over the past decade the slopes appear less dramatic (e.g., Colorado or British Columbia). The positive population trends observed in Montana and California are obvious in these plots. Figure 4 also serves to illustrate the point made above about how dramatically MOBL population trends vary by region. Note for example, the difference between Colorado and neighboring New Mexico or between Montana and British Columbia to its immediate north. It seems likely that there are some important clues in these variations between regions that are worth further study as it pertains to understanding MOBL conservation?

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**Figure 4.** Mountain Bluebird population trends in six states/provinces from the start of the BBS western survey (1968) until 2015. The ordinate (y-axis) is the “BBS Count Index” which is a relative measure of the average number of bluebirds detected in all surveys for each year (note that this varies greatly from region to region) and the abscissa (x-axis) is the year. The solid lines are the 95% confidence intervals. These plots are adapted from the BBS website and those wishing to see other regions can go here and click on the region of interest: [https://www.mbr-pwrc.usgs.gov/cgi-bin/atlasa15.pl?07680&1&15&csrfmiddlewaretoken=3YKakk7LxT2ki6NSpl4mstudYCqdW02C](https://www.mbr-pwrc.usgs.gov/cgi-bin/atlasa15.pl?07680&1&15&csrfmiddlewaretoken=3YKakk7LxT2ki6NSpl4mstudYCqdW02C)
It seems like so many young couples today are experiencing fertility issues but I never expected what I found in a pair of bluebirds. I monitored a nest that had one egg at the Woods Golf Course in Green Bay, Wisconsin on May 7. On May 14 when I returned, there were five eggs. I calculated the hatch date to be May 24.

I returned on May 21 and again on May 26 and the eggs were warm so the hen was incubating them. When I returned on June 1, I thought either a sparrow or raccoon had invaded the nest as the nest was intact but the eggs were gone (Figure 1). I decided to remove the nest to possibly activate the bluebird pair to start a new nest and lay eggs. In looking at the nest better when I got home, I found the five eggs under a new section of the nest that the bluebird had added on top of the existing nest (Figures 2 and 3). The bluebirds apparently knew the eggs should have hatched and gave up on them. Because there were no other available nests at the golf course, they just built over the old eggs. I have never seen this odd occurrence before and have had a bluebird incubate until I knew the eggs were non-viable and removed them.

The next week, when I returned there was a new nest,
and five eggs on June 14. I estimated the hatch date as June 26. The eggs were warm on June 27. When I returned on July 2, the eggs were still not hatched. The hen was still definitely incubating, so I decided to check one of the eggs to see if it was again infertile as they were with the first clutch.

**Important Note:** I have been monitoring bluebirds for quite some time and keep very detailed records where I know expected hatch dates and fledge dates. I would never recommend checking any eggs unless you are very sure that you have calculated the hatch date correctly and have waited at least a week past the anticipated hatch date. I also only check one egg and if there is any embryo development, I would not proceed checking any other eggs.

Sure enough there was no developed embryo formation, just a non-viable egg, so I continued checking all the eggs. This poor pair of bluebirds had 10 eggs, all infertile. I again removed the nest hoping that they might again try to successfully have chicks. Unfortunately they gave up trying.

I also had a nestbox that I began monitoring several years ago on the other side of a lake where we have a summer cottage. I saw the nestbox close to the road and stopped to talk with the owner and inquired if it was okay for me to include his box in my monitored trail totals. He had bluebirds when he first installed the house years before but had not seen them return. This year he was fortunate and a pair laid five eggs. When I stopped to check his box, he informed me that he had installed a second box in his garden that was fairly close to the first box and the lake. He said he had bluebirds in that box too. I checked the box and sure enough he also had five eggs in that box. All the eggs were warm and they appeared to be incubating in both boxes but we were having an unusually warm summer. I was surprised that two bluebird pairs would nest so close to each other. When I returned the following week, I hoped to find chicks in the first nestbox but they were still not hatched. I knew that they were now well overdue and anticipated that they were non-viable eggs and that the bluebird pair had given up on them and found the second nestbox where they laid their second batch of eggs. Again I checked the first egg and continued checking all the eggs and yes, they also had a fertility issue. Happily the second batch of five fledged!
Bluebirds Everywhere

“Bluebirds Everywhere” is a feature that celebrates the widespread and creative uses of bluebird images and the word “bluebird” itself. We invite you to submit your own images and ideas—simply email them to NABSeditor@gmail.com or mail them to NABS Editor, 5405 Villa View Dr., Farmington, NM 87402. Let’s see what bluebirds you can find!

During this summer’s Mega Millions lottery craze, NABS member Pat Ready pointed out to us that Bluebird Liquor, in Los Angeles, is the place to go if you’re looking to buy a winning ticket. Since 2013, the nondescript store has sold four tickets worth at least $1 million. The bigger the jackpot, the longer the line outside the store. If you’re planning to head over there to win your millions, just know that local folklore has it that you must rub your ticket on the head of a bluebird figurine that decorates the store’s front window. Good luck!

According to their website (www.bluebirdmusic.com), Bluebird Music is “an importer and distributor of high quality two channel audio products” sold through their network of dealers; they do not sell directly to the public. No word on how they came to name their company after our favorite bird, but they’ll get no argument about their choice from NABS members. Nice logo, too!

Bye Bye Bluebirdy

In 2008 Missouri joined the small group of states offering a vehicle license plate featuring a bluebird (see the full lineup at www.sialis.org/license.htm). Sadly, all things must pass, and Missouri is replacing the bluebird plate with one commemorating the state’s bicentennial. Handsome as the new plate is, couldn’t they have squeezed an Eastern Bluebird—the state bird—into the corner...?

Good News for Red-heads

For years, populations of the Red-headed Woodpecker have been declining at an alarming rate. The primary culprit seems to be development of the species’ bottomland forest habitat. Numerous conservation efforts sprang into action to reverse these declines, and the hard work has paid off. The population declines appear to have leveled off, raising hope that the species is on the road to recovery. You can learn more at www.birdlife.org.

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An important part of our effort to increase and improve our communications with the Affiliates is to ensure you know who your Regional Representatives are and how to contact us. Listed below are all the NABS Regional Representatives with our NABS email addresses, and the Affiliate organizations each of us is assigned to support. Although we expect to communicate primarily with the person named in each of the Affiliate listings on the last pages of this journal, we welcome the opportunity to correspond with any Board Members or Officers of the Affiliates. These assignments are effective as of June 1, 2018.

**Affiliates Assigned to Each NABS Regional Representative**

Jim Burke: jburke@nabluebirdsociety.org
- Bluebird Hollow Farm (GA)
- Bluebird Recovery Program (MN)
- Bluebirds Across Nebraska
- Bluebirds of Iowa Restoration
- Florida Bluebird Society
- Iowa Bluebird Conservationists
- Johnson County Songbird Project (IA)
- Michigan Bluebird Society
- Missouri Bluebird Society
- North Carolina Bluebird Society
- Ontario Eastern Bluebird Society
- South Carolina Bluebird Society
- Tampa Audubon Society (FL)
- Tennessee Bluebird Society

Kathy Kremnitzer: KathyK@nabluebirdsociety.org
- Audubon Society of Northern Virginia
- Bermuda Bluebird Society
- Maryland Bluebird Society
- Mid-Coast Audubon Society (ME)
- New Jersey Bluebird Society
- Potomac Valley Audubon Society (WV)
- Virginia Bluebird Society

Jim Engelbrecht: jime@nabluebirdsociety.org
- Bluebird Society of Pennsylvania
- Bronx River - Sound Shore Audubon Soc’y (NY)
- Michael Kudish Natural History Preserve (NY)
- New York State Bluebird Society
- Orleans Bluebird Society (NY)
- Purple Martin Conservation Association (PA)

Vicki Butler: vbutler@nabluebirdsociety.org
- Bluebird Restoration Assn of Wisconsin
- California Bluebird Recovery Program
- Lafayette County Bluebird Society (WI)
- Southern California Bluebird Club

Bernie Daniel: bdaniel@nabluebirdsociety.org
- Bluebird Team SMG (IN)
- Bond County Bluebird Society (IL)
- Brown County Bluebird Club (IN)
- East Central Illinois Bluebird Society
- Hendricks County Bluebird Society (IN)
- Indiana Bluebird Society
- Kentucky Bluebird Society
- Michigan Audubon Society
- Northwest Illinois Bluebird Recovery Program
- Ohio Bluebird Society
- Sand Bluff Bird Observatory (IL)
- Southern Illinois Audubon Society

Jane Brockway: janebrockway@nabluebirdsociety.org
- Calgary Area Nestbox Monitors (AB)
- Ellis Bird Farm, Ltd (AB)
- Golden Eagle Audubon Society (ID)
- Montana Bluebird Trails
- Mountain Bluebird Trails Conservation Soc’y (AB)
- Prescott Bluebird Recovery Project (OR)
- Rocky Mountain Blues (ID)

Kevin Corwin: KCorwin@nabluebirdsociety.org
- Bella Vista Bluebird Society (AR)
- Bring Back the Bluebirds Project (BC)
- Colorado Bluebird Project
- Friends of the Bluebirds (MB)
- Jackson Hole Wildlife Foundation (WY)
- Louisiana Bayou Bluebird Society
- Oklahoma Bluebird Society
- Southern Interior Bluebird Trail Soc’y (BC)
- Texas Bluebird Society
- Tucson Audubon Society (AZ)
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 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 working together in a partnership in international bluebird conservation. No cost is associated with affiliating with NABS. Your affiliated organization will be listed on the NABS website and in Bluebird. To find out more about becoming a NABS Affiliate please contact Kevin Corwin at KCorwin@nabluebirdsociety.org. If your organization is listed below, please review your listing to ensure it is current and send any changes to Kevin at the email address listed above. Thanks!

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