



BLUEBIRD

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Cover photo: Male Mountain Bluebird by Jay Petersen/Shutterstock.

Table of Contents photo: If you attend this year's NABS conference in Aiken, SC (hosted by the South Carolina Bluebird Society) you'll have an opportunity to see Red-cockaded Woodpeckers, such as this one. Two things of particular interest in this photo: the artificial nest cavity (biologists cut a chunk out of the pine tree and inserted a nestbox—pretty slick!) and the tree sap around the nestbox (these endangered woodpeckers drill holes in the area around the cavity entrance to stimulate sap flow; the sap deters snakes and other predators).



BLUEBIRD

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General questions may be addressed to:
info@nabluebirdsociety.org
or call 812-988-1876 during office hours
(12-3 pm EST Mon-Fri).

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

www.nabluebirdsociety.org

Summer Message to Our Affiliate Organizations

Thanks to the Affiliates who responded with contact updates. We will be sending all Affiliates a small information package in the coming weeks, which will include some new information and a few reminders.

We're looking forward to seeing everyone in South Carolina in October (you *do* remember that the NABS meeting is coming up, don't you?), hosted by the South Carolina Bluebird Society. See the reminder on page 4 of this issue, along with the welcoming messages from the City of Aiken (page 5) and the Aiken Center for the Arts (page 13). This should be an excellent conference!

We're working with an Affiliate for the 2014 conference but are on the lookout for any Affiliates interested in hosting a future meeting. If you want more information, please get in touch with Phil Berry, First VP for Affiliate Relations (1vp@nabluebirdsociety.org) or President Sherry Linn (goldstrm@vip.net). NABS will provide logistical and financial support, so please consider taking this opportunity to showcase your efforts to promote bluebirds and other native cavity nesters.



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NEW LEAF PAPER

From the President

Sherry Linn

Getting ready for this summer edition feels almost surreal! It really is still spring but a recent week of record high daily summer-like temperatures has resulted in the earliest bluebird hatching in 19 seasons of monitoring on my property. However your trail may be affected this nesting season, my wish is for everyone to have an overall successful year both personally and with the birds!

It is election time again for the Directors of NABS. Please take a moment to read the article page 16, fill out your ballot and mail it right away. Let's have at least the same level of participation as last year. This is your organization so please participate in this important process. Do it now!

Your NABS Board continues to be kept busy and we have a new project we are collaborating on. Wild Lens Inc., a documentary film company in Idaho, is spending this season following NABS member Al Larson as he monitors, collects data, and bands adults and nestlings on his trails in southwestern Idaho. At 91 years of age, and having tended his trails for 35 years, Al is at the stage of his life where like many of us he is trying to find a successor to manage his trails when he is no longer able to. The main film will be Al's story, *The Bluebird Man*, and we are pleased to have some longtime NABS members with years of combined knowledge directly assisting on our behalf – Bet Zimmerman and Kevin Berner. More information will be forthcoming in the Fall *Bluebird*, but for now you can check out some of the early work at www.wildlensinc.org/bluebirdman or www.bluebirdman.com or look for updates through our Facebook page.

From our Membership desk I would like to extend a welcome to all our new members and acknowledge our Life member additions from 2012 to date: Dharma Alagaratnam (IL), Janice Petco (OH), the Roberts Family (MD), Randy Brimm (CO), Alan Beattie (UK), Margaret Anne Payne (CA), Doug and Ethel-Marie LeVasseur (OH) and Will and Joan Wetzel (VA). And we thank those members who respond so quickly to the notices on their Journal and renew right away. This saves NABS money and volunteer time – and it prevents major backlogs at critical times which is most appreciated. Remember your volunteers are spread across the continent and sometimes there may be a slight delay between your mailing in a renewal and it making its way through to Marion

for data entry or response. Any time you have a membership query, we are happy to hear from you at membership@nabluebirdsociety.org and stand ready to resolve any issues.

Due to a combination of the generosity of our members and fiscal prudence by the NABS Board, we are pleased to say that **we will not be raising membership rates this year**. Our basic fees have remained constant since 2005! However, one of the recent changes is the manner in which we handle late renewals or reinstatements. We no longer “backdate” a membership and send a missed Journal for free. If you are late renewing then you will miss your Journal (i.e., if your notice on this edition says it's your last issue, it means renewing by September 10th). You can order that “back issue” for \$7.50 through our website catalog or call Dan Sparks at our Storefront during office hours (see page 1). Your understanding is most appreciated.

Next for us will be our 36th Annual Conference in October hosted by the South Carolina Bluebird Society in Aiken, SC. I hope you can make it as I am looking forward to meeting many new friends and renewing old acquaintances. See you there!

Warmest wishes – Sherry
goldstrm@vip.net



Neil Paprocki / Wild Lens Inc.

From the Managing Editor

Scott W. Gillihan



Writing in the June issue of *Valley Views*, the newsletter of the Potomac Valley Audubon Society (PVAS, a NABS Affiliate in West Virginia), PVAS Executive Director Kristin Alexander shared some information that stunned me: "In 1980, the average American child spent less than two hours a day in front of various electronic media. Today, it is more than seven hours/day." What were kids doing with those other five hours in 1980? To their benefit, they spent much of it playing outside. Research has shown that kids who spend time outside are healthier physically, mentally, and emotionally. In addition, they learn to appreciate wildlife and wild places, and they grow up to become adults who protect the natural world, whether it be bluebirds or blue skies.

Kristin's challenge to the PVAS members is worth repeating here, and I hope you'll take it to heart:

"My summer challenge to you? Get outside and play this summer. Do it for yourself, and if at all possible, take a young person with you. A neighbor, friend, relative, youth group.... Try to share with them your passion for the natural world, and introduce them to a special place that they might be able to explore on their own. A nearby park, a tree in their (or a friendly neighbor's) backyard, or a little stream to stomp in and find crayfish or bugs. It just may be that the meaningful outdoor experience you provide could inspire that child to grow into a concerned citizen who wants to protect the natural world."

And, I might add, you'll be helping that child (and yourself!) to become a healthier, happier person.

My thanks to everyone who contributed articles, photos, and feedback to this issue of *Bluebird*. Additional thanks to Bill Iko, Lauren Kane (BioOne), and Amy Koch for providing access to articles for the Research Review. If you'd like to contact one of the authors or photographers whose work appears in *Bluebird*, just drop me a line and I'll forward your message. As always, please send any photos, articles, or ideas to me at NABSeditor@gmail.com or 5405 Villa View Dr., Farmington, NM 87402.

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In Memoriam

On a sad note, NABS marks the passing of another Charter member. On April 24th Ellsworth "Al" Amidon of New York State passed away. For over four decades Al was active in migratory bird conservation issues and passionately worked to save bluebirds and swallow populations. While expanding nestbox trails in his local area, he mentored others and shared his knowledge through published articles and "on the ground" activities. Throughout his life Al gave freely of himself and encouraged others to get involved in volunteer work and serving others. We are deeply saddened by his passing and extend condolences to his wife Sylvia, family, and friends.

Shop at NABS

Have you visited the NABS online store lately? Have you *ever* visited it? You'll find books, videos, back issues of *Sialia* and *Bluebird*, educational materials, nestboxes, accessories, gift certificates—the list goes on and on. We also provide a source list for vendors that sell nestboxes, predator guards, mealworm feeders, and sparrow traps.

Support bluebirds while supporting NABS!

Visit the NABS storefront online at
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2013 NABS Conference, October 3-5 Aiken, South Carolina



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In addition, Aiken offers quaint locally owned restaurants, unique accommodations and a lively downtown. Explore the historic attractions in addition to stopping in at our Visitors Center and Train Museum located on Park Avenue in downtown Aiken. We're confident that your visit will leave you eager to return to Aiken before you've even departed!

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My Bluebird Story

Theodore J. Suerdieck

My bluebird story begins on March 20, 2012. I live on 5 acres in western Ohio, my house is 600 feet from the road, and my property is surrounded by a 66-acre corn field on three sides. I have lived here three years, and am settling into the country life as I have been a “city boy” most of my life.

I never considered myself a bird watcher until I moved here. I put up two shepherd’s hooks just outside my back windows in the living room. I can sit on the couch and watch the finches eat, drink (I have a bird bath as well), and play the way they do. Quite amusing to watch.

On March 20, a stranger appeared. He was sitting on the “hook” staring right at me with a bright orange chest. Then he turned around and showed those beautiful blue feathers and I was quite surprised as I really don’t recall ever seeing a bluebird before in my life. I’m sure I have, as I am 52 years old, but I obviously didn’t know what I was looking at. I emailed my girlfriend at the time and asked her about it. She said it sounded like a bluebird. So I Googled “bluebird” and of course the first thing that popped up was the North American Bluebird Society.

I followed the links and found out everything I wanted to know about bluebirds, including plans for the construction of a proper nestbox. I thought it would be cool if I could actually get them to hang around. I continued to read and learn about cavity nesters and their competition for proper nesting sites.

The very next day, at work, I received a crate for a job I was building and it was constructed of the exact size of wood that I had learned the night before

was required for the nestbox. I took the wood home and built two boxes right away, and gave one to my girlfriend. I read everything about the location requirements for the box and tried to meet all of them. I located the box in the front yard away from the finches. It is about 75 feet from the house facing northeast and about 5 feet off the ground. A small maple tree and pine tree are both about 75 feet directly in front of the opening. Because it is so close to the house I was able to set up my video camera on “time lapse” and record what was going on during the day while I was at work.

The very next day after I put up the box, a male and female claimed it. I witnessed them all over it, inside and out, checking it out, on the day’s video recording. I couldn’t believe they accepted something new so quickly—I expected this to take weeks. Two days later, the female began to build a nest. I was elated—I couldn’t believe this was happening so fast!

As I watched the recordings every night, I could see how busy she was during the day. When I watched her in person, and saw that she had left the box to go get some more material, I would sneak out real quick and open the door to check her progress. Incredible “construction engineers” that they are, I was amazed at what a perfect “bowl” she was creating with just grass. On the fifth day of building I watched her take a discarded feather from another bird into the house, which I thought was strange as I had read that grass was the only material used for building. The male would come by frequently to hang in the opening and peek in to check on things. It appeared to me that his responsibility at this point was the protection of the box, as I witnessed him frequently chasing off unwanted spectators from the top of the box and pretty much from the whole surrounding area.

On March 29, just one week after claiming the box, Mama had a completed nest inside a box that was only a week old as well. I still can’t believe how quickly this all happened. It was like it was meant to be, like I was really supposed to be doing this right now.

For the next five days, I watched Mama and Papa settle into their new home. What a wonderful sight it was every night when I came home to see those beautiful blue wings flying around the yard and feeling at home. It was obvious that Mama was getting larger, in fact by day five, she could barely make it through the hole to get in the box.



Marion Ball

Then on April 4, I got the opportunity to check the box, which I hadn't done in a few days. She seemed to be spending a lot of time in there, and I was finding it hard to get a chance to peek inside. This day I opened the door to find three little blue eggs! From here on out, I was very careful about the times I checked the box as I didn't want to interrupt the process. Knowing that she would lay only one egg a day I tried to get a glimpse every night to see if she laid another egg. By April 7 there were six eggs and I was completely amazed. We had started to form some kind of relationship, as every night when I got home, she would sit atop the box until she knew I saw her and then fly off to the tree as if to say, "Go ahead, I know you want to look," so I would—every night she let me look and every night I did.

As the days went by, my nightly checks were getting further apart as I was busy doing yard work after work. Then on April 21, I got the opportunity to take a peek. It had been five or six days since my last check, and this time I opened the door to find one egg and five little chicks!

I was continuing my daily recordings just to keep track of predators more than anything. I would occasionally see a blackbird or some other bird come and sit on top of the box and Papa would usually chase them away. Two days later, the day's recording showed a House Sparrow entering the box. I was very scared as I had read all the warnings about the sparrows. I immediately went out to check the box; everything was normal so I just chalked it up to a close call. Little did I know, he was apparently "casing the joint" as the next day's recording showed him entering the box and emerging with a chick in his beak, which he placed on the roof of the nestbox, four consecutive times. I was heartbroken. I couldn't believe the incredible insensitivity of another bird who is in the same position on the food chain. When I went out to check the box there was no evidence of what had happened—no dead chicks, nothing in the nest—it would have been a complete mystery as to what had happened were it not for the video. A very brutal and unmitigated murder, plain and simple.

The next day I realized the sparrows were hanging out in the pine tree. I immediately got out the tree trimmers and started clipping away. I thinned it out so much that they would not be able to hide in there and they all left. Every night I would check to see if they had come back or not and it appeared to me that they had definitely moved on.

As I had read that you should remove the old nest after a successful nesting or the female won't use the box again, I decided that this must also be true for a failed nesting attempt. I removed it and cleaned the box out so it was just like it started. The next

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day, Mama started building another nest! What determination—I couldn't believe she stayed around let alone jumped right into nest building again. The recordings showed her to be working at a little more furious pace this time, and in only three days she was done and the box again was ready to use. The pair had also become much more proactive in the defense of the box as well. It was obvious that they were working together now to defend their house. One evening I watched them both chasing the same sparrow—it really appeared that they were becoming very aggressive almost, which really didn't surprise me as much as it amazed me. I could feel their pain because I had gone through the loss with them through the video.

On May 1, I opened the door of the box to delight in the view of two new eggs in the nest. I felt so relieved that Mama and Papa were giving it another shot and so far everything was going well. Again she began her daily deposit which resulted in a total of five eggs this time. Again I begin my daily video viewing to help with the predators if I could.

On May 16, I viewed another intruder on the video, but this time it was two blackbirds that were just too big to get into the box. They tried very hard—the video showed them flapping their wings with their heads in the box, trying to get to the eggs. The next day provided me with a chance to peek inside to find one egg and four chicks, so the day before, the blackbirds were trying to get the chicks and I didn't know they had hatched yet. On May 19, there were five little chicks and I was a little apprehensive about how this was going to play out this time.

As the seemingly nonstop feedings started, I began to notice Papa taking part much more. He was bringing worms to the opening, dropping them in, sometimes even going inside. Once I even observed Papa bring a bright green caterpillar to the top of the box where Mama was sitting and passed it from his beak to hers as she took it inside to the chicks.

On June 2, I opened the box to find only three chicks! I hoped the others had learned to fly and made it out safely as opposed to any other explanation. The recording for the day showed no abnormalities, but it also showed no signs of any fledglings fleeing the nest, which I thought was strange as the camera was taking a shot every three seconds. I convinced myself that they made it out successfully and all was well.

The very next day, I had the most incredible experience. Mama and Papa had become very comfortable with my actions around the house and it seemed they knew my routine pretty well. Every night I would come home and pull my truck directly into the barn and close the door. This day, I needed



to do some work on the roof, so I pulled up right next to the front of my house, as it is very easy for me to get on my roof from the top of the cab of my pickup. I opened the barn door as I would be needing my tools and such, then went in to relax for a few minutes before going on the roof.

About 20 minutes later I went out to start gathering my things together, and as soon as I walked out the door, Papa jumped from the top of the nestbox and flew to a point just above my head about 20 feet or so and was making a noise I hadn't heard before and seemed clearly upset about something. Fearing the worst, I headed straight for the nestbox and looked inside. All seemed well, still three chicks and they all seemed to be alive. So I continued to gather my things but every time I emerged from the barn, Papa would do the same exact thing. I really felt as if he was trying to tell me something, but what was it?

I went on the roof and worked on my repairs, all the while Papa was sitting on the nestbox squawking and carrying on. I needed something else from the barn, so I hopped down off the roof to the truck, then as soon as my feet hit the ground Papa jumped from the box again and flew right above my head and just hovered there! I walked toward the barn and he followed and then just hovered above the opening. I walked in to get whatever it was, and as I walked back out he was still there still hovering. I thought something is very wrong, what in the world could it be? I stood there in the opening and he continued to hover, and squawk, and I decided I wasn't leaving until I figured out what he wanted.

Suddenly, I heard a noise behind me, up in the ceiling, and when I turned to look, IT WAS MAMA! She was stranded inside the barn and couldn't figure out how to get out. Papa was telling me the whole time and I just didn't understand. I picked up a broom and gently tried to persuade her out but then

I remembered that when we get birds stuck inside at work it seems they can't find their way out until you open a second door. Maybe they can feel the air currents that way, I don't know, but I decided to open the back door to the barn and before I walked to the other side she had already found her way out, and Papa was back to normal.

I could not believe what I had just witnessed. I had just had a close encounter, a communication with a bluebird, an experience I'll never forget. The very next day, Mama, Papa, and the three fledglings were all gone, and the nest was empty. This explains Papa's frantic effort to get Mama out of the barn, as he knew (and I didn't) that they were leaving the next day, and I just witnessed a successful nesting attempt! I felt proud and relieved at the same time. I helped to bring five new bluebirds into the world.

If this were the end of the story, I would have been completely satisfied with my first season of bluebirding, but it wasn't. Two weeks later, Mama, Papa and the kids returned and Mama started building another nest. The family went through another successful nesting attempt with only four eggs this time. The whole time it was a family effort—I witnessed the young bluebirds helping with the chasing of predators and also with feeding the new young.

So all in all, I helped bring nine new bluebirds to the world, and as I write this, they are all still here. I see them nearly every day. They have stayed through the winter and I am supplying them with dried mealworms, and they are very fat and seem to be happy. Occasionally I see one of them go in the box to make sure nobody else has tried to claim it, but they don't seem to use it in the winter.

I look forward to next year as I think the bluebirds feel they have a home here and will nest here again. I have enough room on my property for another box at the far end, which I may consider but I would miss being close to them to observe their lives.

This has been a very rewarding experience and I would like to thank NABS for making all their information so readily available.

T.J. Suerdieck is a Special Machine Builder by trade. He builds and flies R/C aircraft, and enjoys sports cars, golf, nature, and the peace and quiet of living in the country. He has one nestbox, right outside his front window. He is just beginning his second year as a NABS member.



The Runt Bluebird Egg Phenomenon

Bob Peak

In May 1978, Dr. Lawrence Zeleny, founder of NABS, opened a nestbox on his Maryland bluebird trail and made a surprising discovery. The nest in the box contained a tiny Eastern Bluebird egg—approximately the same size as a Ruby-throated Hummingbird egg—only 12 mm long by 10 mm wide at the widest point (Zeleny 1983). Normally, Eastern Bluebird eggs are about 22 mm long and 16 mm wide.

Dr. Zeleny continued monitoring the female—he had banded her as a nestling in 1977—finding that she incubated the undersized egg for two weeks and then abandoned it. About two weeks later, she built a nest in a nearby nestbox and laid another diminutive egg measuring 15 mm by 13 mm. Again, she faithfully brooded the small egg for two weeks before deserting it, and then Dr. Zeleny removed the nest. After another week had passed, she built a third nest in the second nestbox, and laid two miniature eggs measuring 14 mm by 12 mm and 13 mm by 11 mm. Again, she incubated her tiny eggs for the full term before giving up. Since the breeding season was nearly over at that point, Dr. Zeleny concluded that she did not have any additional nesting attempts.

In his 1983 *Sialia* article about these incidents, Dr. Zeleny stated that “this case was quite unusual from two standpoints. First, it is believed to be a rare occurrence for any bird to lay four consecutive miniature eggs constituting three clutches, and no normal eggs. Secondly, in my experience I have never before known a bluebird to attempt to incubate a clutch consisting of only one egg. Even clutches of two eggs are usually abandoned, the birds appearing to consider such small clutches not being worth the effort to incubate them.” Dr. Zeleny further stated that “these miniature eggs, often called ‘runt’ or ‘dwarf’ eggs, usually contain no yolks and seldom

if ever hatch.” Note: When referring to undersized eggs, ornithologists and oologists (egg scientists) tend to use the terms runt and dwarf interchangeably. In some parts of the world, superstitious beliefs have caused people to also call them *cock*, *wind*, *fairy*, or *witch* eggs (Rothstein 1973).

Although some mysteries still exist about these tiny eggs, we have gradually learned a few basic things about the runt egg phenomenon in bluebirds. For one, these undersized eggs often possess a rough, thick eggshell that may be circular, elliptical, or oval in shape—oological field guides describe normal bluebird eggs as having an oval to short-oval shape (Harrison 1998). As one might expect, a runt egg typically weighs much less than an average bluebird egg, which is about three grams (Pitts 2011). Additionally, it is known that runt eggs vary in size, but they are usually noticeably smaller than the smallest extreme expected by normal variation within a clutch. In this sense, they should be considered abnormal occurrences, unlike the usual, terminal “runt” eggs for the Laughing Gull (Mulvihill 1987). The last eggs laid in clutches of this species, and probably other gulls as well, differs significantly and predictably from all others in the clutch, being narrower and less ovate (Preston and Preston 1953).

Another important point to remember is that dwarf eggs usually do not contain a yolk and are therefore incapable of producing young birds. Undeterred by this circumstance, however, a female bluebird has such a strong bond to her eggs that she will usually incubate a dwarf egg the same length of time as normal eggs. Apparently, she cannot distinguish between viable eggs and those lacking a yolk.

Interestingly, the runt egg phenomenon is not precisely correlated with the age of the laying female, although in domestic fowl there is a tendency for younger birds to lay runt eggs (Mulvihill 1987; Pearl and Curtis 1916). Moreover, runt eggs are not necessarily the first—or last—eggs laid in a clutch (Kendeigh 1956; Koenig 1980). If we apply this concept to multiple-brooded birds, such as bluebirds, there is evidence that runt eggs do not occur in any particular order in the succession of eggs for each clutch. That is, the dwarf egg may be the first egg the female bluebird lays, the last egg, or somewhere in between (Mulvihill 1987).

A review of the scientific literature indicates that dwarf eggs have occurred in many wild bird species, including the Acorn Woodpecker, House Wren,



A runt Eastern Bluebird egg with a normal egg.

Photo by the author

European Starling, Tree Swallow, Canada Goose, Northern Bobwhite, Northern Cardinal, Song Thrush, Common Grackle, Red-winged Blackbird, Gray Catbird, and Peregrine Falcon. One study found a much higher incidence of runt eggs in Acorn Woodpeckers (Koenig 1980). Clutches consisting solely of runt eggs are extremely rare and have been reported only for the Song Thrush (M'Williams 1927), Gray Catbird (Rothstein 1973), Northern Bobwhite (Hernandez et al. 2006), and Eastern Bluebird (Zeleny 1983). The Western Foundation of Vertebrate Zoology, which houses the largest collection of avian eggs and nests in North America, has a number of runt egg specimens (Dr. Linnea S. Hall, pers. comm.). Apparently, the scarcity of dwarf eggs made them very collectible treasures in the 1800s—when there were no legal restrictions on gathering wild bird eggs—and consequently many private egg collections contain examples of these tiny ellipsoids. Of course, laws prohibiting egg collecting were passed early in the 20th century—state and federal permits are required today—and the practice is now limited primarily to biologists and other avian researchers.

What causes dwarf eggs? In domestic chickens, yolkless runt eggs can occur in young female birds when hormonal production is not synchronized with the maturation of oocytes (undeveloped ova). Consequently, when ovulation (rupture of an ovarian follicle) takes place, a mature ovum (yolk) does not exist in the material delivered to the oviduct, and the formation of a yolkless egg subsequently occurs. In older hens, it is possible for nonviable tissue in the ovary to be sloughed off, stimulating the egg-producing glands to treat it like a yolk and wrap it in albumen, membranes, and a shell as it travels through the oviduct, thereby creating a yolkless runt egg (King'ori 2012). In bluebirds and many



There were five eggs in this clutch, including a dwarf egg. Two weeks later, the four normal eggs were still there but the dwarf egg was missing. Apparently, one of the parents removed it. *Photo by the author*

other passerines, the exact cause of the runt egg phenomenon is unknown—it may be a temporary malfunction in the female's reproductive tract or perhaps, as in the case of Dr. Zeleny's bluebird, it could be a long-term problem that manifests itself in rare individual birds. Instances of entire clutches being composed of runt eggs suggest a congenital defect or permanent injury to the reproductive system (Mulvihill 1987). As a possible method of investigation into this syndrome, collection and dissection of female birds that repeatedly lay runt eggs might well provide insight into the actual physical cause(s) of runt egg production in wild birds (Mulvihill 1987). Other explanations for runt eggs involve speculation about a genetic mutation being a primary causative factor, but the phenomenon apparently does not have a genetic basis. As a result, biological selection does not act against the genotype of the rare individual that lays a dwarf egg, and thus the appearance of such anomalies (runt eggs) cannot be completely excluded in the future (Rothstein 1973; Romanoff and Romanoff 1949).

How rare are dwarf eggs? Fortunately, in spite of the many influences on the formation of eggs, including genetic, hormonal, environmental, and dietary factors, eggs are rarely laid in a form that is less than biologically perfect. Abnormal eggs are of scientific interest because of their potential for enriching our understanding of normal physiological processes. These eggs are also of interest because they may be a source of large financial losses in the commercial egg industry (Burley and Vadehra 1989). Surprisingly, runt eggs are perhaps the most common egg abnormality among domestic fowl. These tiny eggs occur in domestic chickens at a rate of 0.05 to



A set of three dwarf eggs of a Western Bluebird, collected in California in 1897. A normal egg of this species would be about 22 mm long; these eggs are 10–15 mm long. *Collections of the Western Foundation of Vertebrate Zoology*

0.09 percent—about one runt egg out of every 1,100 to 2,000 eggs (Romanoff and Romanoff 1949). Other chicken egg oddities include double-yolk eggs, soft-shelled eggs, misshapen eggs, excessively rough-shelled eggs, or double eggs (an egg within an egg).

Considering the stress that egg laying exacts on a female bluebird, it is perhaps remarkable that undersized eggs do not occur more often. As bluebird authority Dr. David Pitts has asserted:

The production of eggs is one of the most physiologically demanding activities that a female bluebird undertakes. Each bluebird egg must contain enough stored food to support the development of an embryo into a young bird during the two weeks of incubation. The embryo and its food are surrounded and protected by the eggshell, which contains a large amount of calcium that the female bird collects while feeding and then stores in her body. When a bluebird egg is deposited in the nest, the egg weighs about 3 grams (or 1/10 of an ounce), which is approximately 10 percent of the weight of an adult bluebird. A clutch of five bluebird eggs weighs about 15 grams or 50 percent of the adult female's weight. (Pitts 2011)

Given this demand on the bird's reproductive system, one might expect greater numbers of miniaturized eggs to occur more frequently, especially late in the nesting season when the female's calcium reserve has been reduced considerably. However, documented evidence and anecdotal accounts seem to indicate that runt bluebird eggs may occur at any point—even among the earliest clutches of the nesting season.

Judging by the experiences of nestbox monitors around the US and Canada, runt bluebird eggs are quite rare. Although no long-term scientific studies have been undertaken to show the exact frequency of dwarf eggs among the three bluebird species, biologists consider these tiny eggs to be relatively uncommon occurrences. This viewpoint seems to be supported by scattered statistical information and anecdotal accounts collected in recent years. More than likely, a majority of bluebird trail managers have never seen a runt bluebird egg, but the chances are certainly much greater if an individual monitors a large number of nestboxes on a long-term basis. As a case in point, my wife and I have 23 years of experience (1990–2012) as bluebird trail managers for 250 nestboxes. During that time, I have examined 33,289 Eastern Bluebird eggs, and I have found only *five* dwarf eggs (0.015 percent, or about one dwarf egg out of every 6,700 eggs)—a much lower percentage than one might find among chickens. Regrettably,

I have not measured and weighed each undersized bluebird egg, but in recent years I have photographed several and documented some information about them. In my experience, dwarf eggs have always been accompanied by other normal-sized eggs in the clutch, with as many as five total eggs (four normal-sized and one runt) and as few as two eggs (one normal-sized and one runt). For reasons previously stated, the dwarf eggs have never hatched, despite being incubated by the female the same length of time as the other eggs. The runt eggs have been laid in varying months of the nesting season, but due to the monitoring protocol (monthly), the exact order of the runt eggs in the sequence of eggs was unknown.

As further evidence of the scarcity of runt eggs, Keith Kridler, a well-known bluebirder in Texas and co-author of the book, *The Bluebird Monitor's Guide*, has seen only *three* dwarf bluebird eggs out of approximately 48,000 total eggs (0.006 percent, or 1 in 16,000) in his 48 years of nestbox monitoring. Ann Wick, another veteran bluebird trail manager



Evelyn Cooper found these bluebird eggs in 2009. This clutch included one normal egg, one dwarf egg, and one unusually large egg. These are the only abnormal eggs she has found in 14 years of monitoring. *Photo by Evelyn Cooper*

who lives in Wisconsin, has had approximately 12,000 bluebird eggs deposited in the nestboxes she monitors, and she has found only *two* dwarf eggs (0.016 percent, or 1 in 6,000) since 1990.

Currently, there is no uniform reporting system for the dwarf egg phenomenon in bluebirds, but one possible strategy has been described:

Unparalleled information on the runt egg phenomenon could be gained through the cooperation of bluebird workers over the course of

just a few nesting seasons. Data could be pooled at the end of each season and analyzed for overall frequency of runt eggs within the genus, for each species, with respect to clutch sequence and size and the laying sequence within each clutch. Other rarer egg anomalies could likewise be reported, including oversized and misshapen eggs. Many bluebird workers have undoubtedly encountered runt eggs. Little can be reliably concluded, however, from undocumented accounts of isolated examples. A cooperative effort, on the other hand, could add substantially to our understanding of the runt egg phenomenon. The most basic information that cooperators could provide would be the total number of eggs seen in a season for each species and the number of runt or other abnormal eggs noted. Of course, in calculating frequencies, the absence of abnormal eggs in a sample is of equal interest. When abnormal eggs are found, details such as the size and weight of the egg (also the sizes and weights of any normal eggs in the clutch), position of the abnormal egg in the laying sequence, the position (first clutch, second clutch, etc.) and size of the clutches containing abnormal eggs, and the age of females laying such eggs, would improve the overall analysis. (Mulvihill 1987)

In the future, it will undoubtedly become more challenging to ensure the survival of bluebirds and other native cavity nesters. If we are to gain insights about bluebirds and their nesting habits, there is no doubt that more research needs to be done along bluebird trails across the continent. If we consider Mr. Mulvihill's proposal, perhaps a starting point might be a more coordinated effort among the NABS Affiliates to collect and compile specific information about the frequency of runt eggs of each bluebird species. At the very least, each organization could add a runt egg category to its data sheets and compile numerical data for the phenomenon. Whenever possible, if nestbox monitors would also record length, width, and weights of these tiny eggs, the information could enhance our understanding of each species' breeding biology and reproductive success. Then, as a culminating activity, it might be possible to share all of this accumulated data with NestWatch, a citizen science project that is a joint endeavor between the Cornell Lab of Ornithology and the Smithsonian Migratory Bird Center. As Stan Tekiela said:

No other scientific field relies on citizen science more than the bluebird community. Through citizen observations and research, many organizations have made substantial contributions to the body of knowledge about bluebirds. The volume of data accumulated by volunteer nestbox

monitors is unprecedented. Combining this with other databases and access to the Internet, knowledge once shared by only a few researchers is now accessible to millions. This has made possible the great recovery of our beloved bluebird. (Tekiela 2008)

Despite many mysteries and unknowns about bluebirds, all of us will continue to enjoy their beauty and positive attributes, and I am confident that bluebirders everywhere will remain dedicated to helping these magnificent creatures thrive and continue to be a vibrant part of our natural world.

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Bob Peak is a retired public school teacher who manages more than 200 nestboxes in western Kentucky. His article about Prothonotary Warblers appeared in the Spring 2009 issue of Bluebird. He has been a member of NABS since 1990.

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Gray Rat Snake Visits Nestbox

Carl Lively

I found this snake in a Peterson box in my backyard in Columbus, Georgia. I'm sure it's a gray rat snake (*Elaphe obsoleta spiloides*). No bluebirds were using the nestbox but if you look in the lower left corner of the box you can see some green moss that a pair of Carolina Chickadees put in at the beginning of spring this year before they decided to not use it.

The other picture is of the snake on my fence after he came out of the box. This will give you a good idea of the size of this snake. It does not look all that big in the box but this picture and some simple math shows its size. To the far right side of the picture you can see the tip of the snake's tail. Each one of those vertical boards is 5.5 inches wide. From the tip of its tail going to the left to the tip of its head is I count nine boards; that's 49.5 inches. Along the snake's body I count 10 bumps or coils. I believe if stretched out each one of those coils would add another inch to the length. That's now 59.5 inches. And now finally if you look going to the left again from where the snakes body leaves the 2 x 4 and goes to the top of the fence keeping in mind that the body has gone vertical and is also coiled I believe that would easily add another 12 inches to its length. That yields a final length of 71.5 inches, just half an inch short of 6 feet. Even though I saw it, it seems hard to believe that this is the same snake in the box because in the box it just did appear to be that long. Although it is called a "rat" snake its foods are listed as birds, eggs, and mice. The Audubon field guide I consulted lists its length as 34–101 inches, so this one is only medium sized.



I also want you to know that I *did not* kill this snake. I have seen how some people react to snakes, especially one this large, and the first thing they do is start screaming for someone to get a shovel to kill it. Yes, it's easy to imagine what would happen if a bluebird stuck its head into the entrance hole of this nestbox while this snake was inside.

This snake did not get this big by eating blackberries. I tell my friends that when this snake gets hungry he cannot pull into the local Burger King and order a Whopper, super-size fries, and a large chocolate shake. All non-venomous snakes in Georgia are protected by state law. Even if there was no such law I still would not kill it. This snake was very aggressive, but it only became aggressive when I bothered it. After I took the picture of it on the fence I went down to the far end where the tail was and just touched the tip of its tail. It spun around and almost got me. If I had been bitten it would have been my fault, but I was surprised at how fast it struck.

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

Important Notice – NABS Election – August 15, 2013

In September 2009, NABS adopted triennial classes so that in future approximately one third of the Directors would have terms expiring in any given year. Adjustments to term length were made during the election in 2012 to fully integrate these classes and bring us into accordance with Article XII (2) of the Bylaws. At that same time, Bylaw amendments were adopted regarding annual meetings and voting procedures. Our election is now held annually on August 15th. Please see NABS website page www.nabluebirdsociety.org/Board/boardofdirectors.htm for a copy of the current North American Bluebird Society, Inc. Bylaws adopted October 5th, 2012.

Who can vote? NABS Bylaw - Article XVII (4) states: Only members in good standing as of May 15th shall be eligible to vote in the Annual Election.

A list of current members at May 15th has been pulled from the NABS database and will be used to establish eligibility. Kathy Kremnitzer, NABS Secretary, is not on the ballot and has agreed to act as Election Committee Chair overseeing the tabulation of the vote.

The nominations closed on May 15th and the slate was approved by the Board of Directors. To comply with NABS Bylaws, the slate was posted on the NABS website before June 15th and short biographies are included here.

The following have been nominated for three-year terms:

Bob Benson – currently Chair of the Nomination Committee, Nestbox Committee, and Hotline. Bob has served with NABS for nine years. He resides in MA where he monitors several bluebird trails and works to educate children through school programs and adults through other local organizations.

David Cook – residing in CA, David has been a member of NABS since the late 1990s and presently has been on the Board for one year serving as Chair of the Speaker's Bureau. In previous years he served on NABS Boards and Chaired the Awards Committee. David not only monitors his own trails but works with corporations in his area to institute environmental programs by adding nestbox trails and training new monitors.

Stan Fisher – is a Charter and Life member of NABS residing in MD. Since helping NABS get up and running in 1978, Stan has remained dedicated to bluebirds by being a speaker, mentoring, educating – and monitoring his own trails while assisting with others. He has been a member of the Awards

and Grants Committees for at least four years and is currently the Vice President of the Maryland Bluebird Society.

Sherry Linn – has served on the Board for six years Chairing Membership and the past two as President. She has been involved with bluebirds since 1994 with our Affiliate in British Columbia, the Southern Interior Bluebird Trail Society. Sherry manages a nestbox trail at her home, and participates in everything bluebird!

Linda Schamberger – is an educator of 30 years residing in NY State. Since a pair of bluebirds successfully nested in her backyard several years ago, she has had an intense and insatiable interest in bluebirds, which extends into her classroom. Linda is an active member of the Speaker's Bureau and fields questions from the Hotline. Barely a year ago she took over our languishing Facebook page and has turned it into the "go-to place" for bluebird information. She has raised our presence from under 200 followers to over 1800!

Paul Sherd – a native of Grand Rapids, MI, Paul began his adventures with the bluebirds when he purchased 40 acres of land in 2004 in the Upper Peninsula area. An avid woodworker, he began to build, install, then design nestboxes and currently has several trails. Paul mentors youth in the community by getting them involved in building nestboxes and ensuring they have a good understanding of the proper care and commitment to a bluebird trail.

Dan Sparks – our hard-working StoreFront Manager in IN, Dan is also actively involved in numerous committees: Finance, Website, Speaker's Bureau, and Facebook. He handles our phones and responds to queries directed through the website via our "info@" email address. Dan has served on the NABS Board for over eight years and is always the first one to offer a hand. He also manages several very large nestbox trails.

Two ballots are in this issue of *Bluebird*. Household memberships are allowed two ballots and share their ID Number. Mark only one box on your ballot, be sure to include your NABS ID Number (found on your mailing label), and sign your ballot for it to be valid. If you have any questions regarding your membership status or eligibility to vote, please contact Marion Ball, NABS Membership Database Manager, at membership@nabluebirdsociety.org

You may choose to place your ballot in an envelope for mailing but it must be mailed to the address on the ballot.



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Pairing Nestboxes and Other Suggestions to Benefit Bluebirds and Tree Swallows

Lance D. Wood

As a long-time member of the North American Bluebird Society, I read *Bluebird* regularly, and I am frequently impressed by the efforts of our members to pass on information and suggestions intended to benefit our native birds, and the people who care enough about them to try to help them. Kathy Laine, Mr. and Mrs. Ron Kingston, and I try to do that every June when we put on the “Purple Martin Field Day” in central Virginia, where we teach guests how to develop and maintain a successful martin colony, and how to assist other native cavity-nesting birds, such as bluebirds, Tree Swallows, American Kestrels, Barn Owls, etc.

At times when I read articles in *Bluebird* I feel the urge to offer my own suggestions to address the recurring problems that must be solved as we try to provide safe nesting sites for our native cavity-nesting birds.¹ I was inspired to write this piece when I read Allen Jackson’s article “Commonsense Bluebird Management” in the Spring 2013 *Bluebird*, which provides much useful information on how to establish a nestbox trail for bluebirds. Herein, I offer some additional thoughts regarding bluebirds and Tree Swallows.

Eastern Bluebirds and Tree Swallows are beautiful, beneficial, and legally protected native birds that anyone who likes birds should be happy to have around, but which compete with each other for available housing. As Allen Jackson’s article pointed

out, when bluebirds and Tree Swallows both claim the same nestbox, they fight over it and sometimes destroy nests, eggs, and hatchlings in the process. I avoid that problem because I “pair” the 40 nestboxes for bluebirds and Tree Swallows that I maintain (that is, I erect the nestboxes between 5 and 15 feet apart from one another at widely separated locations). The “pairing” of nestboxes practically eliminates bluebird/Tree Swallow conflicts.

For many years I have observed that bluebirds nest in one of the paired boxes, Tree Swallows nest in the other, and they live side-by-side in harmony with one another (and with the Purple Martin colony that is nearby). Because the paired boxes are near one another, the territorial instincts of the bluebirds and swallows lead them to discourage any other bluebirds or Tree Swallows from nesting in the immediate vicinity of themselves and the martin colony.

I realize that some bluebird enthusiasts do not favor the pairing of nestboxes, apparently because they believe that unpaired boxes will maximize the production of bluebirds and minimize the production of Tree Swallows from bluebird nestbox trails. Because my goal is to maximize the production of both bluebirds and Tree Swallows, and to minimize the inter-species fighting that takes place over nestboxes that are not paired, I have found that pairing nestboxes benefits both species. Of course, if one erects a third bluebird-type nestbox near the

paired boxes, that third box can be used to trap and euthanize House Sparrows, which otherwise would be likely to destroy the nests of both the bluebirds and the swallows.

The NABS factsheet *Getting Started with Bluebirds* says the following about pairing nestboxes: “Nestboxes can be mounted in pairs in areas where Tree Swallows are abundant. When paired, boxes should be mounted 5 to 15 feet apart. This provides nesting sites for both species and helps to prevent competition between them. Different



Ron Kingston

¹ Many of my suggestions, derived from years of experience, are presented at the website www.purplemartinfieldday.org, which has links to two articles published previously in the Purple Martin Conservation Association’s *Purple Martin Update* magazine: “Protecting Martin Housing From Windstorms” and “Experiences and Innovations: One Landlord’s Ideas.”

species of native birds usually do not mind nesting close to each other.”

Note: Paired nestboxes placed closer than 5 feet apart can lead to problems, since a female bird incubating eggs in one box can hear the “food begging” noises from the hatchlings in the nearby box, leading the incubating female to abandon her own eggs to try to feed the hatchlings in the nearby box.

I believe that some of the opposition to pairing nestboxes is derived from studies that have not tested the principle of nestbox pairing appropriately, because those studies have not paired nestboxes between 5 and 15 feet from each other. For example, if a study defines the placement of nestboxes 100 feet apart as “nestbox pairing,” the results of that misguided study will find that Tree Swallows benefit more from such an arrangement than bluebirds do. The reason is that bluebirds do not like to nest closer than about 300 feet from another pair of bluebirds, while Tree Swallows are quite happy to nest at a distance of 100 feet from other Tree Swallows. Only a study that defines nestbox pairing as placing boxes 5–15 feet apart can yield fair and reliable results.

House Sparrows: These birds must not be allowed to occupy bluebird housing if the bluebirds are to survive and thrive, and House Sparrows can enter any entrance hole that would admit a bluebird. Fortunately, in my experience House Sparrows can be easily controlled and eliminated with the bait traps that are available from the Purple Martin Conservation Association (PMCA). I find that House Sparrows cannot resist cracked corn as bait, and I leave a few live sparrows in the holding cages of the traps to lure untrapped House Sparrows. Any native bird that enters the bait trap is released unharmed.

Entrance holes: In my opinion, the only size entrance hole that should be used for Eastern Bluebird/Tree Swallow nestboxes is a round hole exactly 1-1/2 inches in diameter (or 1-9/16 inches in diameter), because those hole sizes readily admit Eastern Bluebirds and Tree Swallows, but prevent European Starlings from entering the boxes, where they kill nesting bluebirds or Tree Swallows and destroy their eggs and young. Larger holes can admit starlings, which means death for nesting bluebirds or Tree Swallows.

Sometimes Carolina Chickadees try to nest in bluebird-type nestboxes, but the larger bluebirds and Tree Swallows displace the diminutive chickadees. I have tried to reserve some nestboxes for Carolina Chickadees by using 1-1/4 inch diameter round

entrance holes, but some small Tree Swallows manage to squeeze through that size entrance and claim the boxes. So this year I am reducing some entrance holes to 1-1/8 inch, hoping that will admit only Carolina Chickadees. (Note: Black-capped Chickadees are larger than Carolina Chickadees and thus need larger entrance holes.)

Pole guards: To protect Purple Martins, bluebirds, Tree Swallows, etc. from the black rat snakes and raccoons that often attack their nests, every one of my martin poles and bluebird nestboxes is protected by some sort of climbing-animal barrier. In my opinion, the most reliable design for a pole guard to prevent climbing predators from destroying nesting birds is either the original version or some variant of Ron Kingston’s stovepipe guard (one version of which is sold by the PMCA). Properly fabricated and installed, the Kingston guard effectively blocks snakes as they wrap around and ascend the pipe or pole, by leading the snake to go up inside the stovepipe guard, only to discover that they cannot ascend past the top, which is made of hardware cloth or solid metal. If a snake or raccoon tries to go around the Kingston guard, they find that its large circumference and smooth sides make it almost impossible for them to “hang on” to the guard and ascend past it. Raccoons are also repelled by the guard’s wobbling. Instructions for making and installing the Kingston guard can be found at www.sialis.org/baffle.htm. I agree with the conclusion of the *Sialis* website’s article that a 4-inch diameter PVC pipe predator baffle cannot be relied upon to stop climbing snakes or raccoons because snakes can wrap themselves around and climb that size PVC pipe, and raccoons can climb it with ease.

Since 1980, Lance D. Wood has served as the Assistant Chief Counsel, Environmental Law and Regulatory Programs, in the Office of the Chief Counsel at the Headquarters of the U.S. Army Corps of Engineers in Washington, DC. For the last 19 years he has hosted the Purple Martin Field Day at the farm belonging to himself and his mother in Central Virginia, as explained on the website www.purplemartinfieldday.org



A Cemetery Bluebird Story

Allen Bower

I first put up bluebird boxes in my backyard 25 years ago. It was five years before I saw a bluebird and 10 years before one nested in one of my bluebird boxes. I helped a lot of people get bluebirds in that first 10 years.

In 2001 I inherited 17 bluebird boxes that were around the Britton (Michigan) Sewage Lagoon from someone who was moving out of the area. I had only Tree Swallows in these boxes because this was their habitat. In 2012 these boxes had four Eastern Bluebird nests (fledging 16 bluebirds) and 89 Tree Swallows. The bluebirds are coming back to our area by us setting out bluebird boxes.

In May 2005 I visited my parents' grave site in the Ridgeway Cemetery. While leaving, I saw Curt, the cemetery caretaker, by the garage that housed the cemetery equipment. I stopped and asked if I could put up six bluebird boxes in the cemetery. After discussing my request, Curt's surprising answer to me was, with a smile on his face, "Oh well, a few more things to mow around won't hurt anything." Curt is a farmer working 1800 acres and feeding beef cattle. He is a very nice, very busy, man.

The Ridgeway Cemetery is two square, 3-acre plots making a 6-acre rectangle in the middle of farming country. Boxes 30–35 were erected May 13–June 3.

Nestbox Design

The bluebird box I put up was my Bower 22 box. I had these boxes already made up from wood scraps I had obtained free from building sites. Each box is made from 2x8 and 2x4 boards (1½" actual thickness). It has a 3½" x 4¼" floor, 1⅜" x 2¼" Davis entrance, ¼" x 3½" vents at the top of the front and back, bottom-hinged front with nail lock, and the floor is 5" below the bottom of the entrance. The box has a flat roof with a 2" overhang in the front and 1" in the back. I put three boxes on ½" metal conduit-rebar poles on the side of the box and tilt the box forward 10°. This lets the water drain off the roof and provides a slanted ladder for the birds inside the box, making it easier for the birds to enter and leave the nest.

Bluebird

Three of these boxes are on telescopic poles 8 feet high to protect against cats, which can jump 7 feet high. I use a water seal to preserve the wood from the weather. I don't let the water seal get inside the box. I believe this box has a slower temperature change inside because of the 1½" wood's insulation value compared with a box made of standard ¾" wood, causing less stress on the baby birds (in my opinion).

Nest Tray

I also use a cardboard tray that is ¼" smaller than the bluebird box floor, with 2" high sides. This makes nestbox monitoring easier, faster, and helps keep the box cleaner inside. I use the cardboard from 14" square Little Caesars pizza box lids because it is thin yet sturdy. I don't use the box bottoms because the grease might draw ants to the nestbox. I get a straight bend by first running a window screen roller tool along the lines where the cardboard is to be bent. I can get four trays from a 14" square box top.

If you don't like pizza that much, this year Little Caesars sold me a new 14" square box for 50 cents. With this grease-free cardboard box I could get eight trays by using the box bottom, for under 7 cents apiece. If your nestbox floor is larger than mine,

Little Caesars makes a 12" x 24" box that might work better for you. I use this box to make my winter tray that takes a piece of cardboard 13" x 20". I can get two winter trays from this larger box.

Unusual Eggs

In 2012 I got excited when box 34 had four white bluebird eggs; three hatched, and they fledged on July 11. It was my fourth nest with white eggs since I've been bluebirding.

Also in 2012, for the first time, I had cowbird eggs in my bluebird boxes. They were in box 35 on May 30 and box 33 on June 13. I returned to box 35 a few days later to take a photo. The egg was gone. I heard that bluebirds sometimes know the egg isn't theirs and throw it out. I couldn't find it. Fortunately, I had my camera when I found the egg in box 33, and was able to get a photo.



A Bower box with Davis entrance.
Note the 1½" thick walls.



Four white Eastern Bluebird eggs, and four “normal” blue eggs with a Brown-headed Cowbird egg.

Good Housekeeping

I have always admired bluebirds for their good housekeeping. They fledge their babies and leave a clean nest, unlike Tree Swallows, which whitewash the inside of their nestbox. Curiously, I found three of my bluebird nestboxes whitewashed inside like Tree Swallow nests: box 32 (five fledged on July 4), box 31 (four fledged on July 11), and box 30 (five fledged on July 25). These were the last three boxes to fledge bluebirds in the cemetery. Box 30, the last box to fledge, had whitewashed cherry pits on top of the nest. I think, because of the hot, dry weather, there was a shortage of insects and the parents had to switch to a fruit diet. And maybe some earthworms were fed, too—earthworms give baby bluebirds diarrhea because the baby bluebird stomach can't handle soil, although it doesn't bother the stomach of their cousin, the robin.

Another thought I had was that a shortage of food made the hungry babies so aggressive to get food that the parents couldn't get inside the box to remove the fecal sacs. The babies' claws broke open the sacs,



Uncharacteristically filthy bluebird nest; see text for details.

leaving a messy nest, and the walls of the box got whitewashed when the babies exercised their wings. Although the parents may not have had the energy to fight the hungry babies to take out the fecal sacs, at least all the babies fledged from those three nests.

I've seen nestbox baby flickers, near fledging time, drive the adult flicker off the nestbox. Flickers take out fecal sacs from 6–8 babies until fledging, but the babies still leave 1½" of fecal material in the box.

Managing for Success

The first year in the cemetery (2005), from the six bluebird boxes, I fledged 11 bluebirds from four nests. I trapped House Sparrows from 12 nests and destroyed 11 sparrow eggs. I lost one bluebird nest to predation and lost a total of nine eggs and baby bluebirds from the six boxes.

Eight years later, in 2012, these six bluebird boxes had 11 nests that fledged 44 bluebirds. There were seven bluebird eggs and babies missing or not hatched. These six boxes produced 53% of my fledged bluebirds. In 2012, my 34 bluebird boxes produced 82 bluebirds and 101 swallows. I am happy with those results because of the hot, dry summer—on July 4 it was 101°F. The farmers' corn yields in the area were only 25–50% of normal because of the lack of rain.

The bluebirds like the cemetery because they have a good source of food to find in short, mowed grass. There is an abundance of perches from which to find food: the branches of scattered trees and the above-ground grave markers. The birds have a good home (bluebird boxes). The nestboxes are protected against House Sparrows and other predators with weekly monitoring. Another plus for this cemetery is a water fountain that sprays in the summer months. When the bluebirds are happy and successful they will be back the next year to nest again.

From my point of view, an advantage of the cemetery is its asphalt roads, with only a short distance to walk to each bluebird box. When I put up six boxes in the Ridgeway Cemetery, I never dreamed that I would fledge 44 bluebirds from just 6 acres in one year. I also like the thanks I get from people after they see their first bluebird in the cemetery.

Allen Bower works tirelessly to assist native cavity nesters; among his many accomplishments, he has developed four nestbox designs, a hinge to change a top-hinged nestbox front to bottom-hinged, a tilt-down pole for flicker nestboxes and for Purple Martin gourds, and a starling nestbox trap. He is a life member of bluebird organizations in four states and a regular member of two others. Allen received a NABS award in 2008, and he and his wife Nina were honored this year with the Ohio Bluebird Society's Blue Feather Award. The Bowers live in Britton, Michigan.

Production of Eastern Bluebirds in Monitored Houses

Leif Marking

Introduction

Bluebirds are cavity-nesting birds that are unable to create their own nesting cavities. Natural cavity availability declined significantly when non-native House Sparrows and European Starlings were introduced to North America over 150 years ago because they were victorious competitors for nest cavities and vicious predators of bluebird eggs and young. However, bluebird populations have been increasing since the birth of NABS in 1978 followed by many state chapters such as the Bluebird Restoration Association of Wisconsin (BRAW). Our Brice Prairie Conservation Association (BPCA) members have recorded our bluebird production activities since 1992 and annually report the numbers to the above organizations. All three organizations provide technical information and instructions for producing bluebirds on their websites: NABS (www.nabluebirdsociety.org), BRAW (www.BRAW.org), and BPCA (www.briceprairieconservation.org).

This report summarizes the numbers of bluebirds produced by BPCA in 2012, recognizes changes from 2011, identifies problems that influenced production, evaluates procedures to increase future production, and documents our historical production.

Procedures

We selected the NABS-style nestbox to promote bluebird production because the design is practical, the boxes are easy to construct, maintain, and clean, and bluebirds readily occupy them. These cedar houses are mounted on 7-foot steel T-type fence posts that are covered with a 5-foot section of 1½" PVC pipe for mammalian predator control. The houses are usually placed at least 200 yards apart to respect the territorial nature of bluebirds and to encourage maximum production of bluebirds. New houses are built with convertible air vents; vents are covered on existing houses to reduce mortality of eggs and young during sustained cold spells in early nesting and to prevent black fly mortality during second nesting. Bluebird ecology dictates nest site and habitat selection: large, open, grazed or mowed areas where bluebirds can forage for insects. House Sparrow competition was diminished appreciably by avoiding active farm and livestock feeding operations. Nestboxes were placed at least 200 feet from woods and thickets to minimize House Wren competition. Weekly observations were recorded in notebooks, and those results were transferred to spreadsheets for calculations, evaluations, and presentations. These spreadsheets accumulate numbers of eggs, numbers hatched, and numbers of bluebirds and other cavity-nesting birds fledged. Finally, the numbers

Bluebird

are consolidated for each member's totals as well as individual and total production rates for all club members and bluebird associates.

Results and Discussion

We monitored 862 bluebird boxes in 2012, 74 fewer than in 2011. These boxes produced 4,679 bluebird fledglings, an increase of 1,385 compared to the previous year. Our bluebird production rate also increased this year to 5.4 fledglings per box, primarily due to the early spring season that favored early nesting activity and more third nesting later in the year than during normal nesting seasons. Some nestling mortality was due to black fly infestations. A dilute solution of Permethrin spray was used with good success to combat the black flies. Three heat cycles occurred in July when local temperatures peaked at 103°F or more and set new records for La Crosse County. Some monitors reported heat mortalities of nestlings and some eggs failed to hatch. Venting the boxes containing advanced nestlings offered better survival. Raccoon were recognized as a major ground predator. Car wax applied to the predator guard shows promise for preventing attacks. House Sparrows interfered with bluebird nesting in limited locations, but wrens again were important predators and competitors on some bluebird trails.

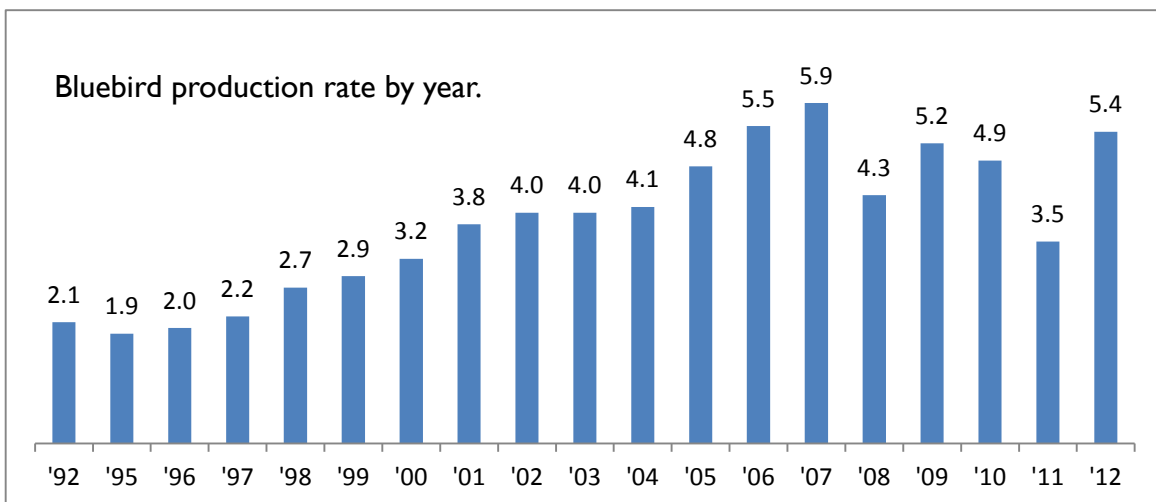
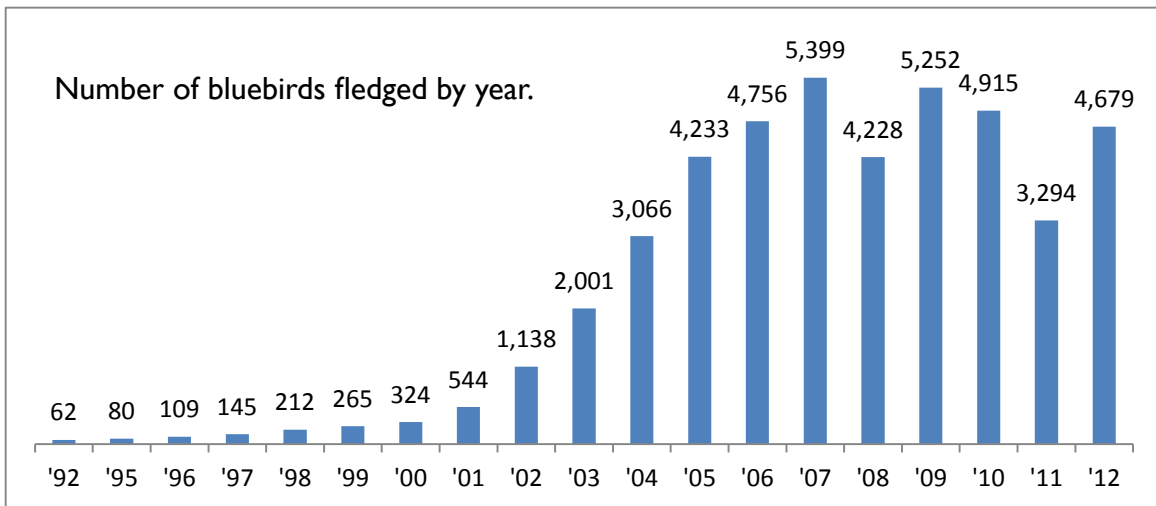
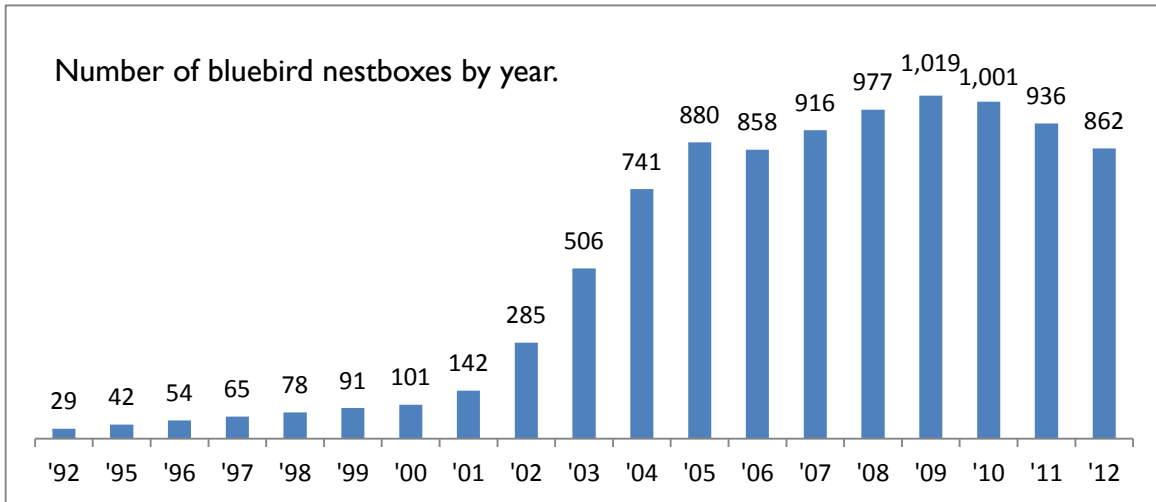
We also produced 547 Tree Swallows, 68 House Wrens, and 78 Black-capped Chickadees. These cavity-nesting species readily occupy the bluebird boxes, especially if they are located at the edge of bluebird habitat. We have found that Tree Swallows may dominate boxes placed near wetlands, so we get some relief for the bluebirds by avoiding those areas. The bluebirds prefer diversified agriculture, mowed, or grazed areas, and if the boxes are properly located and spaced the bluebirds will occupy them before the swallows (serious competitors) nest in early spring.

My 13 bluebird associates produced 892 bluebird fledglings, 84 Tree Swallows, and 35 chickadees. These folks are not members of BPCA, but they like bluebirds and our protocol for producing them, and they are willing to monitor and contribute to our efforts. Of course they realize their efforts also benefit the bluebird population so we are thankful. This associate concept encourages more people to get involved in serious monitoring and keeping good records. Five of the associates had bluebird production rates greater than 5.7 fledglings per box.

Our technology for bluebird production is effective, and we feel satisfied and rewarded with the bluebird responses to our efforts. We look forward to their return in the spring.

We attribute our success for producing bluebirds to:

- providing a nestbox with a cavity size and shape that appeals to them;
- selecting ideal habitat for box location;
- spacing the boxes at least 200 yards apart;
- providing predator prevention for every box;
- moving boxes that fail to attract bluebirds after one year; and
- monitoring weekly to ensure the boxes are available to bluebirds that are searching for a home.



Translocation Simulation for the Slender-billed White-breasted Nuthatch

Gary Slater and Bob Altman

Editor's note: This project was partially funded by a grant from NABS.

Reintroductions are a viable option for reestablishing bird populations in portions of their range from which they have disappeared. The reintroduction process exposes birds to many potentially stressful situations including capture and handling, transportation to the release site, and temporary confinement. Having protocols in place to ensure individuals are released in good condition is critical to the success of a reintroduction, yet we lack information on how small landbirds respond to handling and captivity. This is a problem because landbirds may be more vulnerable to stress under captivity due to their high metabolism and small size.

The Slender-billed White-breasted Nuthatch (*Sitta carolinensis aculeata*) was once common in oak-prairie habitats of Washington's South Puget Sound but is now extirpated, although the area can still support a viable population (Slater and Altman 2006). This knowledge, along with recent successful reintroductions of Western Bluebird to nearby San Juan Island (Slater and Altman 2011), has stimulated interest in reintroducing this nuthatch subspecies.

We conducted a translocation simulation to determine if nuthatches are capable of handling the rigors of a translocation project. We modeled our methods after the successful translocation of Brown-headed

Nuthatches in Florida (Lloyd et al. 2009). Throughout the simulation we monitored the birds' condition so that we could modify the protocol, if necessary, if the health of the birds was in question.

Methods

We used mist nets and call-playbacks to capture pairs of nuthatches in the Willamette Valley, Oregon, where nuthatch populations are relatively large and stable. Pairs were placed in a small bird cage, the kind commonly seen in pet stores, to simulate the transport to the proposed reintroduction site. The cage contained two perches and food (sunflower seeds, suet, and mealworms). We did not provide water in the cage because in previous transport efforts with other species, those birds' feathers frequently became wet when water was provided. This would pose a thermoregulatory risk that we wanted to avoid. The food sources, especially mealworms, are high in water. The cage was covered by a lightweight sheet that allowed air circulation but also created a dark, quiet environment; this technique has been shown to be highly effective for transporting small passerines (Bocetti 1994; Slater 2001; Slater and Altman 2011).

After 3 hours in the holding cage (the approximate time to drive to the proposed reintroduction site at Joint Base Lewis-McChord Military Base), we moved the birds to a small (1.2 m x 1.2 m x 2 m) aviary. The aviary was modeled after those used for Brown-headed Nuthatch translocations in Florida. The aviary provided multiple perches and a nestbox for roosting, along with ample food and water. We held birds in the aviary for 3 days.

We monitored the birds throughout their captivity, particularly during the first 24 hours after capture, to evaluate their condition. While birds were in the transport cage, we checked them after 20, 60, 120, and 180 minutes. We noted whether they were active and alert (good condition) or were fluffed, crouched, or lethargic (poor condition). We also evaluated their condition based on the color and texture of feces. White feces with solid matter indicate a bird has taken both food and water; white liquid feces indicate a bird has taken only water; greenish liquid feces indicate a bird has not taken food or water, and would be considered to be in poor condition. Individuals in good condition were placed in the aviary.

Once birds were in the aviary, we monitored their behavior from a blind 35 m away using binoculars.



Marion Ball

Bluebird

If our presence appeared to impact them, we moved farther away. We monitored birds until each individual fed. If birds did not feed within 1 hour, we moved food trays or perches to better present the food. Birds that fed, appeared active and alert, and exhibited common behaviors such as preening and vocalizing were considered in good condition. Individuals that did not feed or preen or were lethargic and fluffed were considered in poor condition. Once birds fed, they were checked every 1–2 hours to verify they remained in good condition.

On the second day of captivity, we checked at sunrise, midday, and evening to verify that the birds were feeding and appeared active and alert. If they were in good condition at all three observations, we checked them just twice on the third day (morning, evening).

Results – Trial 1

We captured a territorial pair on 4 March 2012. The male was captured first, and placed in the transport cage. The female was captured 2 hours later. While the male was in the cage alone, he spent much of his time at the top of the cage. We moved the suet blocks from the side of the cage to the top, where he immediately fed. Thereafter, we always placed suet blocks on top of the transport cages.

The birds were alert and active over the simulated transport period. However, on two occasions, the female was crouched on the floor of the cage. Although this behavior concerned us, she always appeared alert and in each case she jumped up to a perch. At no time did she exhibit drooping eyelids or a fluffed appearance, which may have indicated stress. Fecal matter on the bottom of the cage indicated that the birds were feeding.

The male had been in the transport cage for nearly 6 hours and the female for 4 hours when we placed them in the aviary. Within 10 minutes both birds were feeding. Shortly thereafter, the male displaced the female from the food and continued aggressive behavior toward her. After being displaced several times, the female moved to the floor. We considered removing her, but as we approached she immediately flew up to a perch. Thereafter, the male and female were observed regularly feeding. We observed no other aggressive interactions that evening.

The next day, we found that the female stayed in the nestbox for 10–15 minute periods and then exited for 1–5 minutes to feed. After a short period the male usually displaced her or chased her, at which time she returned to the nestbox. However, while in the nestbox, the male regularly brought her food. Overall, both individuals were active and alert throughout the day and were considered in good condition.

On the third day we observed the same behaviors: the female stayed mostly in the nestbox, where the male regularly fed her. This pattern was consistent with breeding behavior. The pair had passed all of our criteria for accepting captivity, indeed the fact that they were exhibiting breeding behavior strengthened this view. At midday we released them. They were observed in the capture area on subsequent days, and on their territory during the breeding season.

Results – Trial 2

At the second site, we captured a mated pair on 5 March 2012. We placed these individuals in separate transport cages. Our regular checks always found both individuals on the perches. Suet on the male's bill indicated he was feeding. Fecal matter on the bottom of the cage also indicated that the birds were feeding and in good condition.

After 4 hours in the transport cage, we placed the pair in the aviary. We added a second feeding tray and we put sunflower seeds on top of the nestbox to provide more opportunities to access food in case any sex-dominant behavior occurred. Both individuals appeared calm, and fed and vocalized regularly. We observed one instance where the male displaced the female, but otherwise there were no interactions.

During observations on the second day, the birds were active and feeding. We observed no aggressive interactions, such as those seen in Trial 1. On the third day, the birds were observed in the morning feeding and in good condition. The pair was released, and was subsequently observed on multiple occasions over the next couple of days.

Discussion

Both translocation simulations were considered successful during each stage of the process: capture, 4-hour transport in a small cage, and several days in an aviary. During all observations, translocated individuals were considered in good condition; they appeared active and alert and exhibited common behaviors such as preening and vocalizing. Individuals quickly found food provided for them and fed from all three sources: suet block, sunflower seeds, and mealworms. At no point did any of the four individuals appear in poor condition.

We learned several key pieces of information about nuthatch translocations. First, pairs should be placed in different cages during transport to prevent any sex-dominant behavior that could exclude one sex, likely the female, from accessing food. Second, suet blocks should be placed on top of the transport cage, rather than the side or bottom. Third, in the aviary, multiple feeding platforms with mealworms and sunflower seeds should be provided to provide several feeding

stations and decrease the likelihood that one individual could exclude its mate from the food.

Overall, this study showed that the Slender-billed White-breasted Nuthatch appears to handle capture and captivity well, an important property for being a candidate for translocation.

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Gary Slater is founder and research director of the Ecostudies Institute, a nonprofit organization in Mount Vernon, Washington, dedicated to conserving native birds and their habitats. Bob Altman of Corvallis, Oregon is the American Bird Conservancy's Northern Pacific conservation officer.

Precautionary Measures When Cleaning Nestboxes

Pat Spain

While hantavirus has been recognized as a potential health hazard to individuals cleaning nestboxes, there is another potential health hazard that merits taking extra precaution.

One of the tasks I have as Outreach Coordinator for Polk County Conservation (PCC) is to coordinate and support the volunteers who monitor our bluebird trails. We refer to these volunteers who serve PCC year after year as Stewards. One of the Stewardship leader positions we implement is a County Bluebird Trail (BBT) Coordinator. This person works with each of the other trail monitors for PCC, and coordinates their efforts, compiles yearly records from each of the other Stewards, and monitors one or more trails.

In 2007, our BBT coordinator with over 40 years experience overseeing trails for various agencies across Iowa, most recently for PCC, was diagnosed with Mycobacterium Avium Complex (MAC) poultry tuberculosis (*M. avium*). It is difficult for doctors to put an exact time on when and how he contracted the disease, but as a precaution PCC has since put into place policies for our bluebird Stewards (nestbox monitors) while checking, cleaning out, and repairing nestboxes.

Some background information on this bacterium: "Infection in people is rare, and humans are considered highly resistant to these bacteria. *M. avium* does not typically transfer between people. Infection is more likely to occur in people with pre-existing diseases, especially those having an infection affecting the

respiratory system. People with the highest risk are those with weakened immune systems such as those with AIDS, undergoing treatment for cancer, or recently receiving an organ transplant. The germs can enter the body either by ingesting or breathing; therefore, prevention of this disease simply involves proper hygiene and sanitation. Wearing a face mask to avoid inhaling bird dust is also recommended." (Jacquie Jacob, Tony Pescatore, and Austin Cantor. 2011. Avian Diseases Transmissible to Humans. Cooperative Extension Service, University of Kentucky, College of Agriculture.)

PCC developed recommendations to help ensure the health and safety of our volunteers, including:

- Nestbox monitors are strongly encouraged to wear a respirator while cleaning or making repairs to a nestbox. The National Institute for Occupational Safety and Health recommends an N95 respirator; PCC provides the N95 with an exhalation valve (available from home improvement stores, farm supply stores, industrial equipment stores, and online).
- Monitors should follow proper hygiene: wash hands after cleaning out nestboxes, prior to eating, taking a water break, or handling their steering wheel. We furnish hand wipes and/or hand sanitizer gel for volunteers who are working in remote areas.

Pat Spain is the Outreach Coordinator for Polk County Conservation in Iowa.

Bermuda Bluebirds are “Recent” Immigrants

The bluebirds of Bermuda are a subspecies of the Eastern Bluebird (*Sialia sialis bermudensis*), alike in all respects except for richer coloration—brighter blue above and deeper red below (see image at right). Although there is no evidence that modern bluebirds from the mainland ever travel to the island, they *must* have at some point in the past. A study comparing the genes of the Bermuda bluebirds with those of mainland bluebirds showed that a small group of bluebirds colonized Bermuda about 400 years ago, which coincides with the first human habitation on the island—British colonists settled there in 1609. Exactly *how* the bluebird population was established remains a mystery. Did the British bring the birds to Bermuda, or did their forest-clearing activities open up suitable habitat for a group of bluebirds that arrived on the island under their own power, perhaps blown off course by a storm? For more information, go online to:

<http://blogs.scientificamerican.com/culturing-science/2013/04/08/bermuda-bluebird/>



The State of State Birds

In a humorous jab at the official birds of the 50 US states, blogger Nicholas Lund skewered the odd and sometimes unimaginative choices and the “general lack of thought being put into the whole thing.” As evidence, he points out that seven states have the Northern Cardinal as their official bird, six have the Western Meadowlark, and five have the Northern Mockingbird. He suggests species that would be better choices, including Connecticut Warbler for Connecticut (in place of American Robin), Kirtland’s Warbler for Michigan (in place of, again, American Robin), and Carolina Chickadee for North Carolina (rather than the cardinal). Bluebirds are fairly well treated, as he gives a thumbs-up to Idaho’s Mountain Bluebird and Missouri’s Eastern Bluebird, though he disagrees with Nevada’s choice of the Mountain Bluebird (he would prefer the Himalayan Snowcock—talk about an odd choice!) and New York’s Eastern Bluebird (he feels that Cerulean Warbler would be better). You can read all of his choices at www.thebirdist.com/2013/04/state-birds-what-they-should-be.html

Bluebirds Everywhere

“Bluebirds Everywhere” is a feature that celebrates the widespread and creative uses of bluebird images and the word itself. We invite you to submit your own images and ideas — simply e-mail 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!



NABS member Paul Nelson (via his brother Kevin) submitted this image of a box of Whitman’s chocolates with a bluebird. The bird appears on almost every box in the Sampler line. Whitman’s introduced the Sampler with its cross stitch design around 1911, and the design is virtually unchanged since then.



NABS member Deb Williams found this vintage card of Blue Bird brand buttons at an antique store in Lincoln, Nebraska. The buttons are on a piece of foil and attached to the card by thread.



In the world of sales, “bluebird” is slang for a selling opportunity that presents itself without the salesperson having made much effort to secure it—it just appears out of nowhere, like a bird in the sky. This is according to the website salesdictionary.com

Research Review

A Summary of Recent Scientific Research on Bluebirds and Other Cavity Nesters

Scott W. Gillihan

Why are Eastern Bluebirds declining in the heart of their range?

Most bluebirders know the story of how Eastern Bluebird populations declined due to the combined 1-2-3 punch of habitat loss, House Sparrows, and severe winters, then rebounded with the help of NABS and other dedicated organizations. At the continental level, Eastern Bluebird populations remain strong and continue to grow.

Unfortunately, the species is declining in small geographic pockets, including Florida and the upper Midwest. But those regions are at the periphery of the bluebird's range, where habitat conditions may not be ideal, so population fluctuations may be expected. But another area experiencing population declines is the Ohio River valley region; specifically, central Kentucky. This is in the heart of the Eastern Bluebird's range. Why are they declining there?

Researchers at the University of Kentucky examined this question by comparing results from a nestbox trail established near Lexington (up to 200 boxes, monitored from 1990 to 1997) with results from the 52 boxes they installed at the same location (2008–2010). They also compared local weather records with bluebird counts from the Breeding Bird Survey (BBS) and Christmas Bird Count (CBC).

The primary culprit appears to be harsh winter weather, with competition from House Sparrows adding additional pressure. The evidence comes from the comparison of winter weather records with bluebird populations: the warmer the previous winter, the higher the bluebird population. And although House Sparrow populations are declining markedly at the continental scale, nestbox records from this Kentucky study site showed that House Sparrows increased at the same time that bluebirds were decreasing. The solution: manage House Sparrows and hope for milder winters.

Wetzel, Daniel P. and James J. Krupa. 2013. Where are the bluebirds of the Bluegrass? Eastern Bluebird decline in central Kentucky. *American Midland Naturalist* 169:398–408.

Can't we all just get along?

The European Starling has long been implicated as one of the primary drivers of Eastern Bluebird population declines. The starlings' aggressiveness toward other birds, coupled with their habit of nesting early in the season, means that they can claim the best nest cavities. But are they really the villains they're made out to be?

Amy Koch and her associates monitored more than 600 nest cavities used by starlings, Mountain Bluebirds, and Tree Swallows over a 10-year period. Their study sites were aspen-dominated forest stands in British Columbia. They found that, overall, starlings had little or no effect on the number of bluebirds and swallows or on their nesting success.

Starlings prefer larger nest cavities than do bluebirds or swallows. They also prefer nice, clean, *new* nest cavities, so they are more likely to evict woodpeckers from large, freshly excavated cavities than bluebirds or swallows who have set up house in small, old cavities.

One important caveat: nest cavities in these study sites were very abundant, with birds using less than half of the available cavities in a given year. This gave starlings the luxury of scrapping with woodpeckers for the nice, new cavities while ignoring older cavities, which the bluebirds and swallows were perfectly content to occupy. Had the supply of



Jim Williams

cavities been tighter, starlings might've been forced to use older cavities, which could have come at the expense of the bluebirds and swallows.

Koch, Amelia J., Kathy Martin, and Kathryn E. H. Aitken. 2012. The relationship between introduced European Starlings and the reproductive activities of Mountain Bluebirds and Tree Swallows in British Columbia, Canada. *Ibis* 154:590–600.

Native shrubs are berry good for birds

Invasive non-native plants can be aggressive, obnoxious, and difficult to eliminate. But at least some of them have one redeeming quality: they provide food for native birds. Berry-producing shrubs provide an energy boost that fuels migration and helps birds maintain body heat in cold weather. However, it turns out that not all berries are created equal.

Susan Smith and her colleagues analyzed berries from five native shrubs and four non-native invasive shrubs in New York. They found that fat content and energy density were significantly higher in the native species—and it wasn't even close. The non-native berries averaged less than 1% fat (a critical energy source for birds) while the natives averaged

about 32% and some approached 50%—this is a huge difference.

And birds know there is a difference. Smith monitored berry consumption on both types of shrubs and found that birds stripped berries from the native shrubs at a much higher rate.

Good species to consider for your landscape: native dogwoods (*Cornus* spp.) for fall berries; American holly (*Ilex opaca*) and sumac (*Rhus* spp.) for winter berries.

Smith, Susan B., Samantha A. DeSando, and Todd Pagano. 2013. The value of native and invasive fruit-bearing shrubs for migrating songbirds. *Northeastern Naturalist* 20:171–184.



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Affiliates of the North American Bluebird Society

The North American Bluebird Society serves as a clearinghouse for ideas, research, management and education on behalf of all bluebirds and other native cavity-nesting species. NABS invites all state, provincial, and regional bluebird organizations to become NABS affiliates in a confederation of equals all working together toward a common goal, a further partnership in international bluebird conservation. No cost is associated with affiliating with NABS. Your affiliated organization will be recognized and listed on the NABS website and in *Bluebird*. If your organization has a newsletter, please forward a copy to our headquarters. To find out more about becoming a NABS affiliate, read our Affiliate Letter. Notice: If you are listed below, please check listing to see if it is current. If not, please contact web@nabluebirdsociety.org and NABSeditor@gmail.com with correct information.



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