

GET TO KNOW *Bluebirds*

A GUIDE *for*
YOUNG
NATURE
LOVERS



OTTAWA NATIONAL WILDLIFE REFUGE
STANGE PRAIRIE
Area Open During
Daylight Only



By Myrna Pearman

Publisher

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NOTE

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Eastern Bluebird



Mountain Bluebird



Western Bluebird

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Foreword

To keep
making progress,
we need young
people like you
to join us!

DEAR YOUNG BIRD ENTHUSIAST:

Bluebird conservation is one of the most successful grassroots efforts ever attempted. Countless individuals and groups like the North American Bluebird Society (NABS) and our partners, have brought all three species of bluebirds back from the brink. But what about the future? To keep making progress, we need young people like you to join us!

Bluebirding is a fun and fascinating way to get out into nature and make a real difference for wild birds. But bluebirding does have a serious side. When you become a nestbox landlord, you're making a commitment to do your best to help bluebird parents successfully raise their babies.

So, before you start bluebirding, please learn how to build or purchase nestboxes that are safe and sound, how to pick a good location for the box, how to properly set it up, and how to protect its precious contents from predators. Sadly, a neglected nestbox often does more harm than good.

One of the most important and exciting parts of bluebirding is the last part – maintaining your boxes and monitoring them to see what is going on inside.

NABS is proud to publish this book by Myrna Pearman, who started her first bluebird trail when she was a young teenager. She has been assisted by veteran bluebirders across North America, especially by Bet Zimmerman Smith and the NABS Education Committee.

We hope that this information inspires you to join us in helping bluebirds and other species of native cavity-nesting birds, survive and thrive. NABS and our partners look forward to helping you fill the skies with blue!



PRESIDENT, NABS, 2022

Acknowledgments

Firstly, my thanks to Bet Zimmerman Smith—bluebirder extraordinaire, webmaster of the most comprehensive bluebird website there is (sialis.org), and life member of NABS—for coming up with the idea for this book and for being beside me each step of the way.

Thanks also to Dr. Bernie Daniel, President of NABS, for his knowledge, support, and encouragement, and to the other members of the NABS Education Committee for their input and guidance: Jane Brockway, Christine Boran, Kathy Kremnitzer, Stan Fisher, Harold Sellers, and Joe Seigerst. I am also grateful for the feedback and editing suggestions of Leo de Groot as well as veteran bluebirders Russ Amy, Steve and Cheryl Eno, Claudia Lipski, Jim Potter, Carolyn Sandstrom, Lorne Scott, and Maren S. Smith.

One of the most satisfying experiences of this project has been the enthusiastic support I've received from nature photographers across the continent. The amazing images that grace these pages have all been generously donated by bluebird lovers. I've listed photographer credits beside each image, but I feel that extra special thanks are due to each photographer: Jim Ashley, Ron Asp, Russ Amy, Mike Azevedo, Kevin Berner, Kyla Black, Brent Bouwsema, Judy Boyd, Don Brockmeier, Jane Brockway, Kathy Burgis, Tim Daniel, Leo de Groot, Dave Elphinstone, Rick Filafilo,

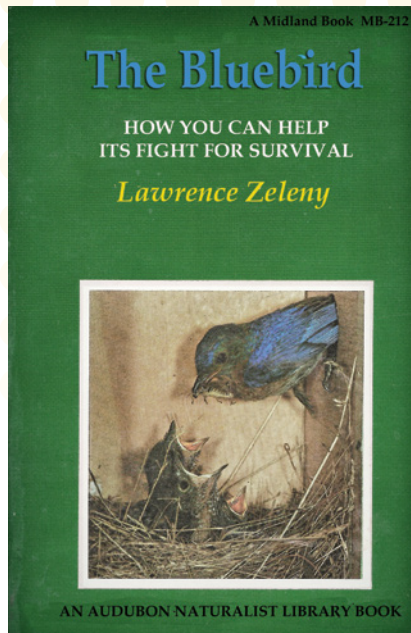
I'd like to thank the many people who have been instrumental in bringing this project to fruition.

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I've appreciated the information and support from Robyn Bailey, NestWatch Project Leader, Cornell Lab of Ornithology. Cornell's leadership in developing technological innovations has made it easier to engage young people while at the same time encouraging them to get outdoors.

About the North American Bluebird Society



The North American Bluebird Society (NABS) was founded in 1978 by Dr. Lawrence Zeleny. Dr. Zeleny, who had developed an interest in Eastern Bluebirds in his youth, observed, during his career as a scientist, a dramatic bluebird population decline in the state of Virginia. He began setting out boxes near his office and was pleased to observe that bluebirds took up residence. After retiring in 1965, Dr. Zeleny, with the help of his wife Olive, began a decades-long crusade to help bring back the bluebirds. He wrote a book about bluebirds in 1976: *The Bluebird: How You Can Help Its Fight for Survival*.



Interest in bluebirds and the North American Bluebird Society skyrocketed in 1978 following an article published in *National Geographic* by Dr. Zeleny titled *Song of Hope for the Bluebird*, and after an article by Joan Rattner Heilman titled *You Can Hear the Bluebird's Song Again* was published in the November 1979 issue of *Parade Magazine*.



The North American Bluebird Society carries on Dr. Zeleny's work through education, conservation, and research focused on bluebirds and other native cavity-nesting birds. The organization, which is overseen by a volunteer board of directors, publishes a quarterly journal (*The Bluebird*) and has awarded more than \$100,000 in research grants. This book was funded under an educational grant from NABS. To learn more about NABS or to become a member, visit their website.



nabluebirdsociety.org

education conservation research



NABS Board of Directors in 1979

Back row: Rev. Ray Prybis, William Stott, Jr, George Grant, Chuck Dupree, Jack Finch
Front Row: Lorne Scott, Mary Janetatos, Marilyn Guerra, Larry Zeleny

Introduction and History

CHAPTER One

How the Bluebird and Coyote Got Their Color

Paraphrased from *Myths and Legends of California and the Old Southwest*.

Compiled and edited by Katharine Berry Judson, 1912, further edited by Bet Zimmerman Smith.

Probably Pima or Cherokee in origin.

A long time ago, the bluebird was a drab, ugly color. One night the Dream spirit spoke to him and told him how he could change his color. "Far away in the mountains," said Dream Spirit, "there is a magic lake that has no inlet or outlet, so the water there is always the same deep blue color. "Bathe in the blue lake each morning for five mornings," Dream Spirit told him, "and while you bathe, sing this magic song ...

The water is blue. I went in. And now I'm blue too."

Bluebird did as the Dream Spirit said. On the fourth morning, all of Bluebirds' feathers fell off, and he came out of the lake as naked as the day he had hatched. But the fifth morning when he emerged from the lake, he was covered with blue feathers.

Now all this while Coyote, who was bright green, had been hiding in the grass, watching Bluebird. He wanted to jump in the lake and eat Bluebird, but was afraid of the water. But on the fifth morning Coyote said, "How is it you've lost all your ugly color, and now you are blue and cheerful? You are more beautiful than anything that flies in the air. I want to be blue, too!"

"I went in the lake five times on five mornings," said Bluebird. He taught Coyote the magic song, and Coyote went in five times, and sang.

"The water is blue. I went in. And now I'm blue too."

And on the fifth morning, Coyote emerged as blue as the little bird.

Then Coyote was very, very proud. He was so proud that as he strutted along the road, he looked from side to side to see if anybody was looking at him now that he was a beautiful blue coyote. Then he looked back to see if his shadow was blue too and ran headfirst into a stump so hard that he fell down in the dirt and was covered all over with dust. And that is why even today coyotes are the color of dirt.



Bluebirds

Bluebirds are beautiful, beloved birds. Their bright blue color, gentle nature, and lovely, soft warbling song have captured our attention for centuries.

For many people, bluebirds are associated with peace, happiness, and all things good. Hundreds of songs and poems have been written about bluebirds, and their images have adorned many products, ranging from cars to food cans to record labels!



There's a Bluebird on Your Windowsill

CHORUS:

C F C

There's a blue-bird on your win - dow - sill There's a rain-bow in your sky; There are

F C G7 C

hap - py thoughts your heart to fill, near e - nough to make you cry.



The bluebird carries
the sky on its back.

HENRY DAVID THOREAU



Bluebird
Pizza





Bluebirds have also captured our interest because they can be enticed to take up residence in **nestboxes** (also called birdhouses). This habit has brought them into backyards, gardens, communities, and parks across North America and is the reason we have written this book!

Nestboxes have helped boost local bluebird populations and their use has not only sparked a continent-wide conservation movement, but it has allowed scientists to collect important data about bluebird biology and ecology. We hope that this book will inspire you to help them too.



note

This book is a general, basic guide for young people who want to know more about bluebirds or to start their own bluebird trail. There are many excellent, more detailed guides and online resources that can be consulted for additional information. The North American Bluebird Society's website (nabluebirdsociety.org) is the best place to start. While you're at it, why not join NABS and support their great bluebird conservation work!?

Some of the terms used in this guide may be new to you, so we have **bolded** them. You can check the glossary on page 65 for definitions.

Of Birds and People

Why are birds so special to humans? Why were they important to our early ancestors? Why are people so interested in them today?

In some early societies, certain birds were thought to have supernatural powers. Others were important to humans because they were hunted for food and/or for their feathers. Over 5,000 years ago, in southeast Asia, the Red Junglefowl (*Gallus gallus*) was so prized for its meat and eggs that it was domesticated. As early peoples

migrated to different corners of the world, their chickens were brought along. Today, the meat and eggs of domestic chickens—all of which have the Red Junglefowl as their common ancestor—feed millions of people around the world.



Interestingly, bird feathers have also played an important role in human culture. In Europe, the use of feathers in fashion (mostly from conquered lands in the Americas) became popular in the 16th century. By the mid-1800s, feather-adorned hats were so popular across Europe and North America that millions of birds were being



killed to make them. People also used to steal wild bird eggs for food or collect them as a hobby.

Not only did our ancestors kill birds for their meat and feathers, but they also killed them for sport. One example was a holiday tradition known as the Christmas “Side Hunt.” Participants would choose sides and go afield with their guns; the team that brought in the biggest pile of dead animals won the contest.

By the mid-1800s, scientists were getting concerned about declining wildlife populations and citizens began speaking out against this senseless killing of wild animals for pleasure. A leading voice against the Christmas Side Hunt and other sport killing was ornithologist Frank M. Chapman, an early officer in the Audubon Society. He proposed a new holiday tradition that began on Christmas Day, 1900—a “Christmas Bird Census” (now called the Christmas Bird Count) that would count birds during the holidays instead of killing them.



Concern about unregulated activities also prompted governments to enact special protections, including the Migratory Birds Convention Act in Canada in 1917, the Migratory Bird Treaty Act in the United States in 1918, and the Convention for the Protection of Migratory Birds and Game Mammals in Mexico in 1936. These laws regulated the hunting of game birds (e.g., ducks and grouse), made it illegal to hunt other birds (e.g., owls and songbirds), and banned the collection of feathers, eggs, and nests of native birds without a permit.

Today, scientists continue to study all aspects of bird biology, ecology, and conservation, and many organizations around the world work hard to protect birds and their habitat. Tens of thousands of volunteers participate in the Christmas Bird Count—now the largest bird census in the world—as well as other bird and wildlife tracking programs. These volunteers, called citizen scientists, contribute greatly

to our understanding of nature. See page 71 for more citizen/community science initiatives that you can get involved in.

Unfortunately, many songbird populations across the globe continue to decline because of such challenges as habitat loss, invasive species, free-roaming cats, pesticide use, and climate change. It's also a sad reality that some people still illegally capture and smuggle wild birds for the pet trade.

On a positive note, most folks get joy from watching and studying wild birds in their natural environment. Bird watching is now one of the most popular hobbies in the world. The great thing about birds is that they can be enjoyed by both young and old alike, and in our own backyards and communities. We can birdwatch on our own, or as part of a group or club. Many friendships are formed through the shared love of birds.





NORTHERN SAW-WHET OWL. KYLA BLACK

All About Cavity-Nesting Birds

CHAPTER two

Bird Nests

North American birds nest in a variety of places using an astonishing range of materials (e.g., sticks, grass, pine needles, feathers, mud, saliva, pebbles, fur, moss, leaves, and spider webs). Most species build nests that are open on the top, so the eggs and young are exposed to the weather and predators.

A few open-cup nesters are shown below. From top (left to right): Great Horned Owl; Anna's Hummingbird; Killdeer; and Sandhill Crane.

Another category of birds—cavity-nesting birds—differ from open-cup nesters by their habit of using a **cavity** (hole) to nest in. There are over 80 species of cavity-nesting birds in North America.



PHOTOS BY MYRNA PEARMAN

The Story of Cavity-nesting Birds

As mentioned previously, cavity-nesting birds prefer to nest inside a hole. This hole can be in a tree, a riverbank, in a cliff, or in a human-made structure. Some examples of human-made structures include under the eaves or in the walls of buildings, and in machinery, mailboxes, wooden fenceposts, and nestboxes. When compared to open cup nests, cavities offer extra protection from both **predators** and the weather.



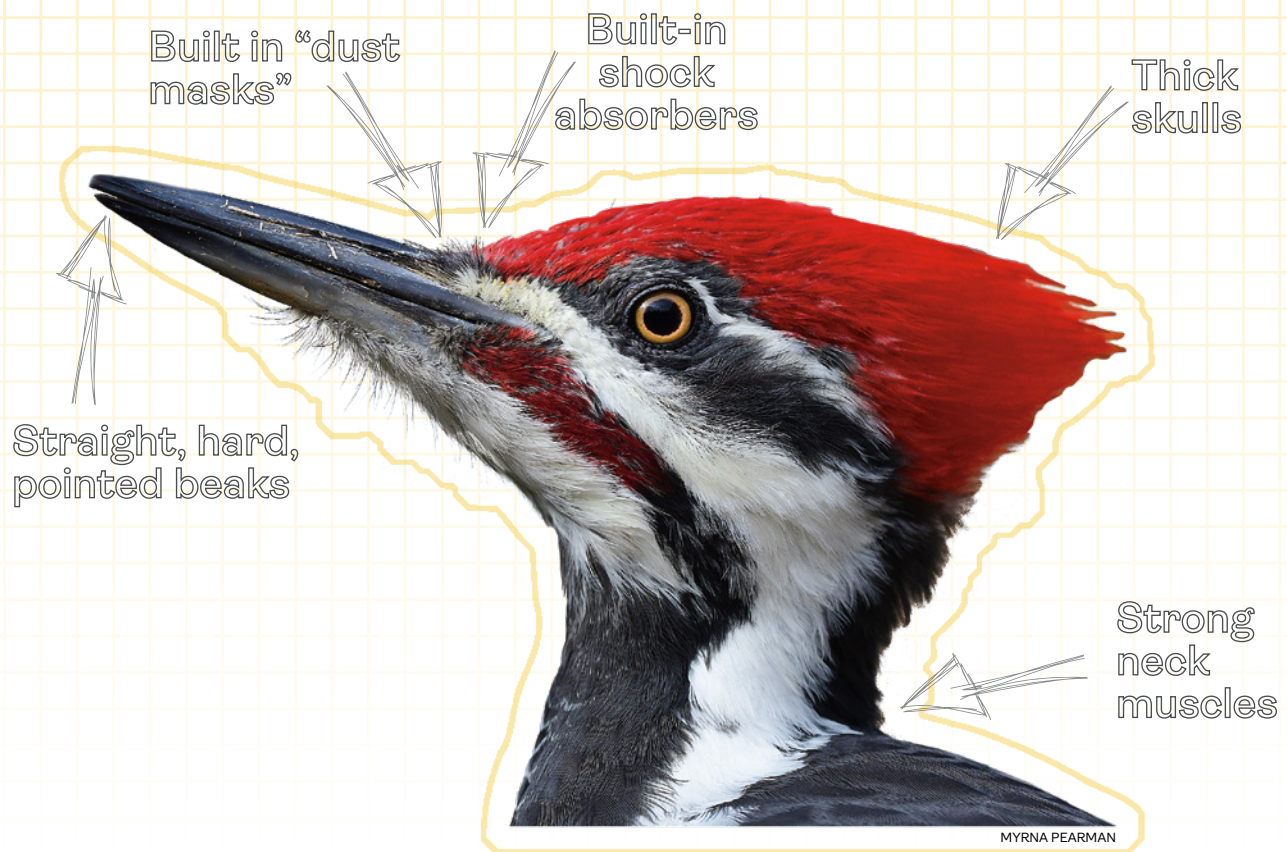
Primary Cavity Nesters

A **primary cavity-nesting bird** is one that can excavate its own nest site. The most common primary cavity nesters that nest in trees are woodpeckers (Yellow-bellied Sapsucker, below), nuthatches (Red-breasted Nuthatch, right), and chickadees (Black-capped Chickadee, bottom right). Other species, such as kingfishers and some species of swallows, dig their nest cavities into clay or sand banks.



PHOTOS BY MYRNA PEARMAN





Armed with the remarkable tools shown in the diagram above, woodpeckers can efficiently peck out both nesting cavities (to raise their families) and roosting cavities (to sleep in at night and as shelter during cold weather). While woodpeckers will

sometimes reuse their old nesting cavities, they usually excavate new ones each spring. Their empty cavities are then left as “second-hand” homes for other birds and animals to use.

The Importance of Snags

Snags, which are dead and dying trees, are just as important as healthy, living trees. Birds perch on their dead branches to sing or watch for passing insects. Their bark and branches are often full of insects that birds can feed on. The soft, rotting wood is excavated by cavity-nesting birds to nest or roost in. Empty cavities are used by mammals such as raccoons, bats, and squirrels. Even tree frogs and some insects (e.g., bumblebees) occasionally use tree cavities. Snags are the cafeterias, cradles and condos of the forest!



Secondary Cavity Nesters

Secondary cavity-nesting birds also need to nest in a cavity, but do not have the adaptations necessary to create their own. So, they either need to find a natural cavity (e.g., a natural hole in a tree or other crevice) or seek out a cavity left behind by a primary cavity nester.

Secondary cavity nesters are generally categorized by size: large and small. Large secondary cavity nesters (e.g., some species of falcons, ducks, and owls [Eastern Screech-Owl, top right], require holes left by larger woodpecker species while the smaller cavity nesters (e.g., bluebirds, wrens, titmice and swallows [Tree Swallow, right]) can use holes left by smaller woodpeckers. This book focuses on bluebirds and the other small cavity nesters, but we have listed some of the larger cavity nesters in Chapter 5 (page 67), along with links to websites and downloadable books for more information about them.



The Story of Jim's Snag

Jim Potter, a well-known naturalist in Alberta, Canada, has pioneered efforts to increase populations of cavity-nesting ducks (especially Common Goldeneyes and Buffleheads) by setting out hundreds of large nesting boxes around local lakes and ponds. He also carefully monitors all the natural cavities on his farm. Several years ago, he watched a pair of Pileated Woodpeckers excavate a nesting cavity in a large Balsam Poplar snag. The woodpeckers successfully raised a family that season. After the woodpeckers left, he noticed that a family of Flying Squirrels had moved in. The squirrels spent the winter in this snug second-hand home. The next spring, after the squirrels moved out, a Common Goldeneye took over the cavity and raised her **brood**. The following winter a pair of Red Squirrels took up residence. They then left in the spring and a Northern Saw-whet Owl took over the cavity to raise her family. All these different species were able to raise their families in this one cavity!



PHOTOS BY MYRNA PEARMAN

Problems Facing Cavity-nesting Birds

Cavity-nesting birds face many challenges. Two of the most serious challenges include:



Habitat Loss:

Since most primary cavity nesters excavate their holes in old or dying trees, nesting sites are lost when forests are cut down. Many people, especially in urban areas, remove snags because they think they are worthless and unsightly. Habitat loss has also occurred through **urban/suburban sprawl**, removal of treed fence rows and hedgerows between fields, the switch from wooden fence posts to plastic or metal fencing materials, huge agricultural fields of a single crop, and increased use of large, modern, high-powered farm machines to plant/harvest right up to the edge of streams, forested areas, roads, and fence lines.



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Invasive Species:

In the 1800s, people did not have the level of ecological awareness that we have today. This lack of knowledge resulted in well-meaning but ill-informed people bringing two problematic cavity-nesting species—House Sparrows and European Starlings—from England to North America. Both species are extremely aggressive, often chasing away or sometimes killing native cavity nesters. We discuss how to deal with these pests on page 60.

House Sparrows: House Sparrows (once called English Sparrows) were released

in several eastern U.S. states starting around 1850. They readily adapted to their new habitats and

reproduced rapidly, spreading quickly across the continent. By the late 1800s and early 1900s, scientists were sounding the alarm. But it was too late because House Sparrows were already well established. Today, they are one of the most abundant bird species in the world.



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European Starlings:

European Starlings (also called Common Starlings) were brought over to North America in the early 1870s and late 1890s. Within a century, they had spread across the entire continent. The North American population, now numbering more than 100 million, is descended from these early



introductions. Not only do European Starlings compete for nesting sites, sometimes even driving off the woodpeckers that made the cavity, but huge flocks can completely strip berries from bushes and trees that would have been eaten by wintering native birds, including bluebirds.

**This book will
help you offset
these problems
by teaching you
how to become a
bluebirder!**



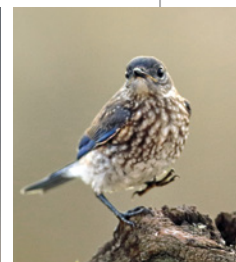
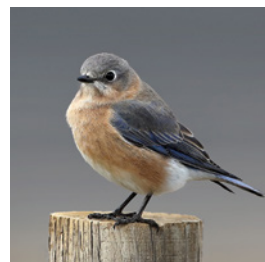
Getting to Know Bluebirds

CHAPTER three

Like the common and abundant American Robin, bluebirds are songbirds that belong to the Thrush (Turdidae) family. Bluebirds are found across the United States and Canada, as far north as Alaska, and as far south as central Mexico.

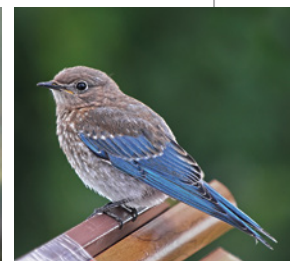
There are three species of bluebirds in North America: Eastern Bluebird (*Sialia sialis*), Mountain Bluebird (*Sialia currucoides*), and Western Bluebird (*Sialia mexicana*).

It will come as no surprise to learn that all three species of bluebirds are blue! The males all have blue backs and tail feathers, but only the Mountain Bluebird has a powdery blue breast; both Eastern and Western Bluebird males have rusty red breasts. The females of all three species are less brightly colored than the males, showing bright blue in their wing and tail feathers only when they fly. The colors of young bluebirds are muted, with spotted breasts and bluish-gray wing and tail feathers. By late summer/fall, young birds start to transform into their adult-looking **plumage**. More details about the coloration of each species are included in the Species Accounts (pages 27 to 40).



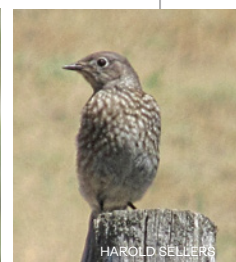
PHOTOS BY DAVE KINNEER

Eastern Bluebird: Male, Female, Juvenile



PHOTOS BY MYRNA PEARMAN

Mountain Bluebird: Male, Female, Juvenile



CLAUDE RIOUX

HAROLD SELLERS

HAROLD SELLERS

Western Bluebird: Male, Female, Juvenile

It's All In a Name:

Scientists have assigned every organism on earth with a scientific name. This name, also called the binominal name and usually in Latin, consists of two parts—a genus and a species. The genus for all bluebirds is *Sialia* while the species names are as follows: Eastern (*sialis*); Mountain (*currucoides*); and Western (*mexicana*).

While Eastern, Mountain and Western Bluebirds share many characteristics and behaviors, each species has unique history, habits, and habitat requirements. Let's start by outlining what they have in common. In the Species Accounts (pages 27 to 40), we share details about what makes each species unique.



Why are Bluebirds Blue?

Unlike other plumage colors, the blue color of bluebird feathers is not due to a pigment. Rather, it is produced by the unique structure of the feathers themselves and the way they refract the light spectrum. If you take a bluebird feather and crush it, it turns dull gray. Adult bluebirds look different to each other than they do to us because birds' eyes can detect color in the **ultraviolet (UV) light** spectrum. UV waves are invisible to the human eye. This UV-coloration may play an important role when it comes to how the birds "see" each other.

What All Species of Bluebirds Have in Common



Nesting:

All three species of bluebirds are secondary cavity nesters. Because they nest in cavities, they can be attracted to nest or roost in nestboxes, which are simply artificial cavities. We discuss nestboxes in detail in Chapter 4 (page 41).



FRANCINE OUELLETTE

EA



DAVE KINNEER



RUSS AMY

MO



RON ASP



LISA D'WALKER-ROSEMAN

WE



CLAUDE RIOUX



Studying Bluebird Migration

For the past several decades, one of the primary methods used to study bird migration has been to band individual birds with small, numbered metal bands. These bands identify individual birds, so details (e.g., where they were banded, how old they were, etc.) can be gathered when banded birds are later recaptured or found dead. See page 55 for more details about banding.

New bird tracking technologies are now being used to add to the base of knowledge gathered from the decades of data collected by band returns. While some secrets of migration have been unlocked using bands and new tracking tools, many mysteries remain.

2

Range and Migration:

Bluebirds are found across most of North America (Eastern Bluebirds are also found in Bermuda). The breeding, overwintering, and migration range maps for each species is included in the Species Accounts (pages 27 to 40).

The bluebirds that breed across most of Canada and the northern United States migrate south for the winter. In the mid-regions of North America, some individuals stay year-round, while others will migrate. In the far south, bluebirds tend to be year-round **residents**. In mountainous regions, bluebirds may move up into higher elevations to breed, then descend back into the valleys for the winter.

Tracking Mountain Bluebirds

Between 2014 and 2016, Ellis Bird Farm partnered with Dr. Kevin Fraser (University of Manitoba) to study Mountain Bluebird migration using **light-level geolocators**. This research was supported by a NABS research grant.



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Light-level geolocators are tiny devices that are strapped to the backs of birds using a thin harness. The units collect data using a light sensor to record light levels during the day. When the backpacked birds return in the spring, they are captured, the unit is removed and the data are downloaded. A total of 60 Mountain Bluebirds from central Alberta, Canada, were outfitted with units, and a total of 16 birds returned. Of these 16 monitored birds, data were recovered from 14 of them. The journey of the birds that were tagged in 2014 and returned in 2015 are shown on the map to the right. One of the most important lessons from this and other migration research is that birds pay no attention to our human-created political boundaries. Wildlife survival requires the cooperation of people across many countries.



LEO DEGROOT

3

Habitat:

Bluebirds prefer open or semi-open grassland habitat with widely spaced trees and little or no **understory**, and with sparse ground cover or low grass. They can be found in forest clearings, clear-cut forests, burned areas, pastures, orchards, mowed meadows, large lawns, parks, cemeteries, golf courses, and along roadsides. They like areas with perches (such as fences, power lines, and shrubs) nearby for hunting and to be able to keep an eye on their nests.

During the winter, bluebirds seek out areas where berries are plentiful (see “Diet” below).

4

Diet:

During warm weather, and especially when they are feeding young, bluebirds tend to eat mostly insects. Depending on the region and the insect species available, they



will eat grasshoppers, crickets, beetles, spiders, caterpillars, ants, wasps and bees, flies, butterflies, moths, snails, sow bugs, weevils, and termites. During periods of wet weather, they will also take earthworms that are forced up out of the soil. During the summer months, they may also eat berries and other small fruit. Like most birds, bluebirds will also take other prey if it is readily available (e.g., skinks, salamanders, small snakes, lizards, and frogs).

Berries are the main food source on their wintering grounds and during the summer when the weather is so wet and cold that insects are less active or unavailable. In some regions, bluebirds will be attracted into yards and gardens that have berry trees. The specific berries preferred by each species are listed in the Species Accounts (pages 27 to 40).

To feed, bluebirds usually perch on a branch or fence post to watch for insects. If they see an insect on the ground, they will drop down to pounce on it. If a flying insect passes by, they will swoop out to nab it mid-air. Mountain Bluebirds will also **hover** while hunting.



Some bluebirders also supplement the natural diet of their bluebirds with mealworms, which are the larval stage of the darkling beetle. These insects are easy to grow, and bluebirds quickly learn to come in to dine on them at special mealworm feeding stations. However, mealworms should only be offered in limited quantities as a special treat, or when the weather is bad because—like humans—bluebirds need a varied diet to stay healthy. NABS has a Fact Sheet (Mealworms) about the proper way to feed mealworms (nabluebirdsociety.org/PDF/NABSFactsheetMealworms.pdf).

You can purchase mealworms commercially or grow your own. Check out sialis.org/raisingmealworms.htm for details.

Some bluebird monitors also supplement the diet of bluebirds (especially Eastern Bluebirds) with crumbled suet mixtures. We have included one recipe below. Check out sialis.org/suet.htm for others.



BLUEBIRD SUET

Ingredients

1 cup lard

1 cup crunchy peanut butter

1 cup (yellow) cornmeal

3 cups oats ("Quaker" cereal type)

1 cup sugar

Powdered sterilized eggshells
(chopped peanuts, raisins, and sunflower hearts can also be added).

Directions

Melt lard and peanut butter together and stir until blended. In a large bowl, mix dry ingredients together (except for the oatmeal) and then pour in the melted lard and peanut butter. Slowly blend in the oatmeal until the mixture is too stiff to stir. Pour the mixture into a glass or greased pan, cool in refrigerator. Cut into pieces when cool and freeze until needed. The mixture can be frozen until needed.



5

Songs and Calls:

Like most members of the Thrush family, bluebirds have soft, beautiful songs. Their specific songs and calls are described in the Species Accounts (pages 27 to 40), along with links to websites that have audio recordings of their songs and calls.

Songs are usually made by male birds and typically only given during the breeding season. Songs have two main purposes: to attract a mate, and to tell other males that the territory has been taken.

Calls are usually heard throughout the year. They are used either to communicate with other birds of the same species, or to warn of danger. Bluebirds will also snap their bills and make a clicking sound when they feel that their nest is threatened.

6

Nesting Cycle:

Bluebirds start nesting when they are one year of age. In the spring, migratory males (especially Western and Mountain Bluebirds) usually arrive on the nesting areas before the females. They arrive early to set up their territories and to start advertising themselves to potential mates by singing. Eastern Bluebirds will often arrive back on their breeding grounds already paired up.

Once the male has a mate, he will try to entice the female to use a certain natural cavity or nestbox by flicking one wing, a behavior called a wing-wave. The female

inspects the box and decides whether she will accept it. The females make the final decision about which house they will use.



As part of their courtship display, a male may also sing and flutter in front of the female with his wings and tail partly spread. As shown below, the females often beg the male to feed her—a common behavior in many bird species referred to as **mate feeding**.



Bluebird nests typically consist of fine dried grass or pine needles, but other available materials, such as thin strips of bark, may also be used. They usually line the cup of the nest with finer grasses but will occasionally (especially Mountain and Western Bluebirds) use a few feathers, plant stems, or even animal fur.

The female does most of the nest construction. The male's primary jobs are to protect his mate and their nest from predators, and to keep other males away from her.



The female bluebird makes her nest just the perfect size. Even if she decides to build inside a large cavity, the actual cup is small enough so her body can tuck in above the eggs and young.



Once the nest is complete, the female lays one pale blue egg (rarely white, see side bar) a day, usually in the early morning. Since she does not start incubation until she has a full **clutch**, all the eggs will hatch at about the same time.



About 3-5% of bluebird eggs are white, not blue. Scientists suspect females that lay white eggs have some sort of problem with their shell glands, which fail to deposit the usual blue pigment onto the shell. White eggs hatch normally and **nestlings** hatched from white eggs have normal coloration.

Only the female develops a **brood patch**, so she alone **incubates** the eggs. A brood patch is a bare patch of skin on the breast that develops when the feathers are shed or plucked out. This warm patch of skin is then placed directly on the eggs or newly hatched birds to keep them warm. Male bluebirds do not have a brood patch, so they cannot incubate the eggs. However, they may go into the nestbox and sit on the eggs when the female is away, to protect the eggs from predators or from the extremes of heat or cold.



The female will incubate the eggs for a period of about two weeks. See the Species Accounts (pages 27 to 40) for more detailed nesting information.



Bluebird young usually hatch over a 24-hour period. Nestlings use an “egg tooth” to cut a hole around the center of the shell, which they then push out so the shell breaks apart in two pieces. It usually takes a baby bluebird between one and six hours to make its way out of the shell.



Female bluebirds, and possibly the males as well, may eat the eggshells after the young have hatched, likely because they provide a source of calcium. If the eggshells are not eaten, the female carries them out and drops them away from the nest.



Bluebirds are naked at hatching, with just a few tufts of gray **down feathers**. Their eyes, which are closed at hatching, start to open at about 5 to 6 days and are fully open at 8 days of age. Because they have very few feathers, newly hatched **nestlings** cannot regulate their body temperature, so the female will brood them at night, and during the day if the weather is cold.



After their feathers are more developed, the nestlings can regulate their own body temperature and thus stay warm without being brooded.



Both parents help raise their young. They work hard keeping their hungry family fed! When the nestlings are small, they are given small, soft-bodied prey. As the young grow and develop (and their appetite increases!), beetles, butterflies, grasshoppers, and other hard-bodied insects are added to the menu.



Not only do bluebird parents have to bring their young food, but they also need to remove their poop. Fortunately, the baby's waste material is enclosed in a mucus-coated sack, called a **fecal sac**. A newly hatched bird's digestive system is not very efficient, so the adults eat the sacs for their



WILLIAM MURDOCK



nutritional value. As the nestlings grow, the parents pick up the sac, carry it outside and drop it away from the nest where it won't attract predators.

Young bluebirds stay in the nest for about three weeks. The following aging chart will help you determine the approximate age of the nestlings.

0

DAY ZERO

Hatching day; pink in color; eyes sealed; sparse tufts of down; moist at hatching; very tiny.



3

DAY THREE

Similar to hatching date but with longer down tufts ("bad hair day"). Note that down is only on capital, humeral and spinal tracts.



6

DAY SIX

Feathers start to break through femoral, humeral and spinal tracts.



9

DAY NINE

Becoming more alert; primaries not yet exposed, but other feather growth evident; bare patches of skin still visible.



13

DAY THIRTEEN

Bright, alert and active; down feathers on crown stick out; no exposed skin except on lower abdomen; primary wing feathers more exposed; wing feather color can definitely be used to sex; some individuals start to clack their beaks.



14

DAY FOURTEEN

Sleeker; coordination increases. Avoid opening front- and side-opening boxes after this date.



15

DAY FIFTEEN

Smooth in appearance; a few down feathers poke up here and there.



16

DAY SIXTEEN TO FLEDGLING

Increase in weight; sleeks out and become more agile; all down feathers drop out. Avoid opening top-opening boxes after this date.



PHOTOS BY MYRNA PEARMAN

When the young are almost ready to fledge, they will come up to the entrance hole to be fed. There is a lot of competition between the nestlings for food!

Once they are old enough to **fledge** (leave the nest), their parents encourage them to exit and take their first flight. The **fledglings** aren't always able to fly well or far, so while they usually aim for a nearby tree branch or other raised landing spot, they sometimes crash land on the ground.



EA



PHOTOS BY DAVE KINNEER

Young bluebirds, once fledged, do not go back into the nestbox. The **fledglings** remain near their parents until they are independent, usually for about a month. For the first week or so, while they are still learning how to be bluebirds, they remain close to trees and other cover, taking advantage of their camouflaged coloration.



Once they become more skilled at flying and recognizing potential threats, fledglings will follow their parents over longer distances. They beg their parents to feed them by calling, opening their beaks, and waving their wings.



The fledglings gradually learn to hunt on their own and the parents reduce the amount of food they deliver. Once the fledglings are independent, they are called **juveniles**.

After the nesting season is over, bluebirds tend to disperse away from the nesting site. However, they will often reappear in the breeding area during late summer/fall and will check out boxes for potential use the following year. This behavior is called **prospecting**.

The Bluebird Nesting Cycle

The nesting cycle of bluebirds—including when **migrant** birds arrive at their breeding grounds, when nest building starts, when the first egg is laid, how many eggs are laid, how long the incubation period lasts, how long young stay in the nest, and how many clutches are laid—is influenced by various factors, including latitude, weather, the health of the adults, habitat quality, and food supply.

Climate change also appears to be having an impact on the bluebird life cycle. A recent paper published by Ellis Bird Farm showed that, on average, Mountain Bluebirds are now arriving in Alberta, Canada approximately 19 days earlier than they did in 1961.

Depending on the region, habitat quality and success of the first nesting, bluebird pairs may raise more than one brood—sometimes even three or four in warmer regions. In most cases, the male will continue feeding the earlier fledglings while the female starts on the next nest.

Interestingly, nesting bluebird pairs are sometimes joined by “**helpers.**” These helpers will assist the parent birds by bringing food to the nestlings. Helpers may be other adult bluebirds but are usually their offspring (especially males) from earlier broods.

7

Plumages and Molting:

From the time they fledge until late summer/fall, young bluebirds are grayish in color with blue showing on their wing and tail feathers, with spots on their chests and some spotting on the back (depending on the species). Pictures of juvenile birds are shown in the Species Accounts (pages 27 to 40).

By late summer/fall, juveniles start to transform into their adult-looking plumage. Adults typically **molt** (shed their old feathers) once per year, after the nesting season is over. The old feathers are gradually replaced with new ones, a process that can take several weeks.

8

Bathing:

Like most songbirds, bluebirds love to bathe. Bathing helps clean their feathers and enables the birds to cool themselves down. Family groups will often visit a bird bath or natural water source in which to splash around together.



Bluebirds, like many other bird species, also occasionally sunbathe. To sunbathe, the birds find a sunny spot where they spread out their wings and tail, and “soak up the sun.” It’s interesting to watch birds sunbathe because they act as if they are in a trance.



9

Other:

Thanks to the efforts of scientists and observant bluebird trail monitors, we have learned many other interesting things about bluebirds:

- The typical lifespan of most bluebirds is probably only about two years.
- About half of all fledglings die in their first year.
- Some bluebirds pair up for one season only while others may remain in pairs and return for several seasons together, to either the same box or a different box.
- DNA evidence shows that male bluebirds will sometimes mate with other females, and females will sometimes **dump** their eggs in nests belonging to other bluebirds.



JOHN LANE

- In areas where their ranges overlap, Mountain Bluebirds have been known to **hybridize** (mate with) Eastern (photo above) and Western Bluebirds.
- First clutches are usually the largest; subsequent clutches tend to be smaller.
- Bluebirds tend to have larger clutch sizes in the north than they do in the south.
- Yearling females lay smaller clutches than older females and tend to start laying later in the season.
- In the south, the likelihood of an egg failing to hatch is highest late in the season.
- In the north, early broods may fail because of cold weather or wet conditions.
- Individuals (usually newly fledged young or adult males) will “peek into” the boxes being used by other bluebirds.

Species Accounts

The information at the beginning of this chapter summarized the traits that are shared by all three species of bluebirds. These next sections show the ranges of each species and discuss their unique characteristics.

Eastern Bluebirds

(*Sialia sialis*)

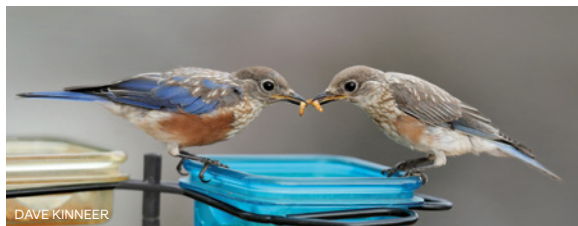
State bird of Missouri and New York
Azulejo Oriental (Spanish)
Merlebleu de l'Est (French)

Identification

Male Eastern Bluebirds are vivid, deep blue above and rusty or brick-red on the throat and breast. The males in a rare and local population in Arizona have distinct coloration (paler underparts, orange throat and chin, paler upperparts, and less bright belly. Female Eastern Bluebirds are grayish



above with bluish wings and tail, and a light orange-brown breast. Some females are more brightly colored than others. Fledglings and juveniles have spots on their chest, and blue wing and tail feathers.



DAVE KINNEER
PHOTOS BY DAVE KINNEER

Eastern Bluebird: Male, Female, Fledgling, Juveniles (male left, female right)

Songs and Calls

SONGS: a warbling song with several phrases, each phrase consisting of 1 to 3 short notes. Harsher chattering notes may be interspersed with whistles. Typically, unpaired males sing from a high perch or sometimes in flight while females sometimes sing this song when they see predators on their territory. Paired males sometimes sing a much softer version of this song while females are laying eggs.

CALLS: a soft, low-pitched *tu-a-wee* which lasts a little less than a second, with males' calls typically slightly longer than females'. Given in all seasons, this call is a way for individuals to keep in touch with each other or to let adults alert their nestlings that they are bringing in food. When individuals get too close to each other, they may issue a single, harsh screech. Females make a very soft, low chip when a courting male approaches.

OTHER SOUNDS: both females and males will clack their bills in the presence of predators or other intruders.

CHECK OUT

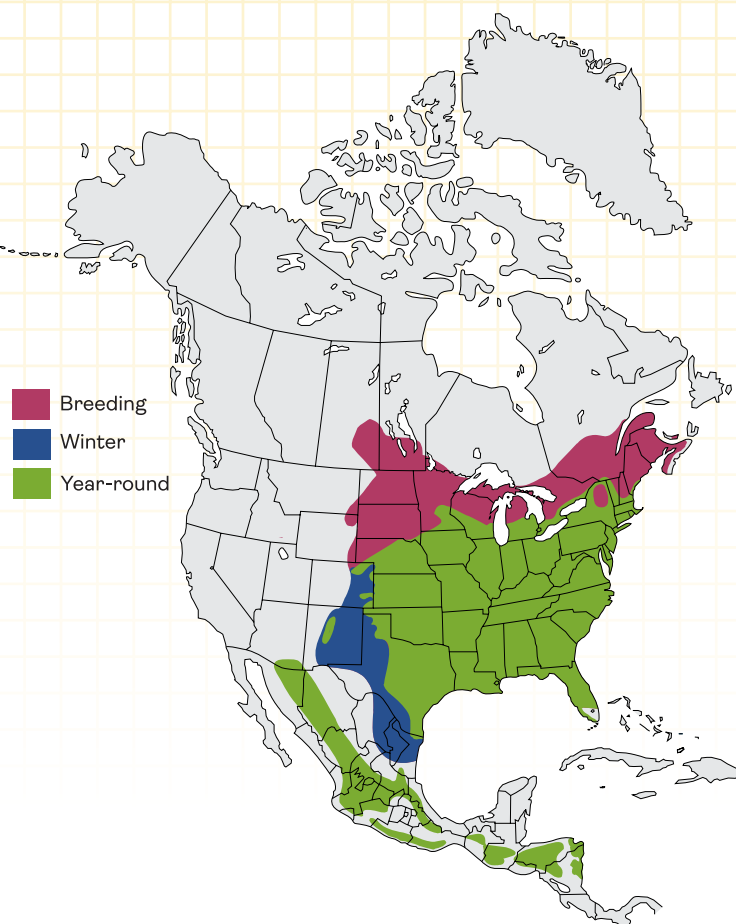
www.allaboutbirds.org/guide/Eastern_Bluebird/sounds

to listen to song and call recordings

Range

Eastern Bluebirds breed across eastern North America from southwestern Saskatchewan to Nova Scotia, southward to central Texas, Florida, southeastern Arizona, central Mexico, and central Nicaragua. They also breed on the island of Bermuda. Approximately 5 – 15% of Eastern Bluebirds breed in Canada, approximately 80% in the U.S. and 10 – 15% in Mexico/Central America.

Northern populations are migratory (medium-distance migrants), with most individuals overwintering at lower elevations in Oklahoma, New Mexico, Texas, and Mexico. On rare occasions, individuals may reach Cuba during the winter. During mild winters, some individuals will remain in the northern states and southern Canada.



Habitat

Eastern Bluebirds have adapted well to suburban landscapes, so, in addition to being found in the types of habitats described on page 16, they will also nest in urban and suburban backyards. In the winter, they move to where they can find sufficient berries.

Diet and Feeding Behavior

Eastern Bluebirds, like the other two species and as described on page 16, prefer to eat ground-dwelling **invertebrates**. They catch their food by watching for prey on the ground from a low perch, hovering over it and then fluttering down to pick it up. Occasionally, they will also snatch insects in mid-air. During the fall and winter, Eastern Bluebirds switch to eating berries, including mistletoe, sumac, black cherry, tupelo, currants, wild holly, dogwood, hackberries, pokeweed, and juniper berries. They will often perch on a branch while feeding on berries. They have occasionally been recorded eating salamanders, small snakes, lizards, and tree frogs.



KEVIN BERNER

ANN WICK

Eastern Bluebirds relish mealworms and, because they commonly nest in urban areas, are often fed these treats. Adult Eastern Bluebirds will feed mealworms to their young and, during periods of cold weather, mealworms will be especially popular.



History

It is thought that the prehistoric range of Eastern Bluebirds was limited to openings created by fallen trees (perhaps helped by beavers) in forested areas. It's likely they also nested around Native American villages where abandoned corn fields provided suitable habitat. In Canada, early French settlers found Eastern Bluebirds so pretty that they sent feathered skins to the French government.

The range of the Eastern Bluebird is thought to have expanded into the Great Plains during the early 1900s with the

arrival of settlers, probably because early settlers planted orchards, used wooden fenceposts (the birds could nest in them as they rotted), created cattle pastures (which provided good habitat) and started setting out nestboxes to attract these insect-eating wild neighbors.

Then, between the 1920s and 1970s, Eastern Bluebird numbers declined significantly, likely due to several factors, including competition from House Sparrows and European Starlings for nesting cavities (see pages 59-60), the replacement of wooden fence posts with metal posts, the increased use of toxic pesticides, and habitat loss. During the mid-1970s, several very cold winters also had a devastating impact on their population. From about 1980 to 2000, bluebird conservation efforts resulted in an Eastern Bluebird population increase in the U.S. of about 2 to 4% each year. However, for reasons unknown, these increases have not continued past 2000 in the U.S., although the population is increasing in Canada. It's estimated that there are about 23 million Eastern Bluebirds in North America today.

Life Cycle

The Eastern Bluebird breeding season begins in the early spring, with the season starting as early as January in the far southern parts of their range (e.g., the southern U.S. states like Florida and Alabama). The season commences later the farther north the bluebirds nest, even as late as June in the Canadian provinces of Saskatchewan and Manitoba.

Many Eastern Bluebirds arrive on their breeding grounds already paired up. If

EASTERN BLUEBIRD NESTING DETAILS

Clutch Size	Number of Broods	Incubation Period	Nestling Period
2-7 eggs (usually 4 or 5)	1-3 broods (rarely 4)	11-19 days (average 14)	17-21 days

they arrive unpaired, it usually takes about a week for individuals to find a mate.

Eastern Bluebirds can live for 6 to 10 years. The oldest one on record lived for 10 years and six months. It was banded in New York on May 23, 1989 and was found dead in South Carolina on November 30, 1999.

Predators

The most serious predators of Eastern Bluebirds include raccoons, snakes, hawks, and falcons. Other predators include black bears, domestic and feral cats, chipmunks, fire ants, black flies, and flying squirrels.

Mountain Bluebirds

(*Sialia currucoides*)

State bird of Idaho and Nevada

Azulillo Pálido (Spanish)

Merlebleu azuré (French)

Identification

Adult male Mountain Bluebirds have powder-blue upperparts with gray or white on the lower belly. The adult females are duller in color, with blue wing and tail feathers. In fresh fall plumage, the females' throats and breasts are sometimes tinged with reddish orange. While most females are a plain ashy-gray overall, there are some females that are distinctly rufous/reddish in color. The young are brownish gray when they fledge, with small white spots on their back and irregular dusky

spots on their breasts. Like the females, they show blue on their wing and tail feathers. Older juveniles become sleek and, in late fall, start to acquire adult plumage.



Mountain Bluebird: Male, Female



MYRNA PEARMAN



HAROLD FISHER

Mountain Bluebird: Fledglings, Juvenile



WILLIAM MURDOCK

Mountain Bluebird: Rufous adult female

Songs and Calls

SONGS: two song types—at dawn, a loud, chirruping song similar to that of the American Robin. Throughout the day, a soft, repetitious warbling that can last many minutes.

CALLS: a soft, nasal, non-musical *tew* or *peu* note, and a high-pitched *tink* to communicate alarm.

OTHER SOUNDS: both females and males will clack their bills in the presence of predators or other intruders.

CHECK OUT



https://www.allaboutbirds.org/guide/Mountain_Bluebird/sounds

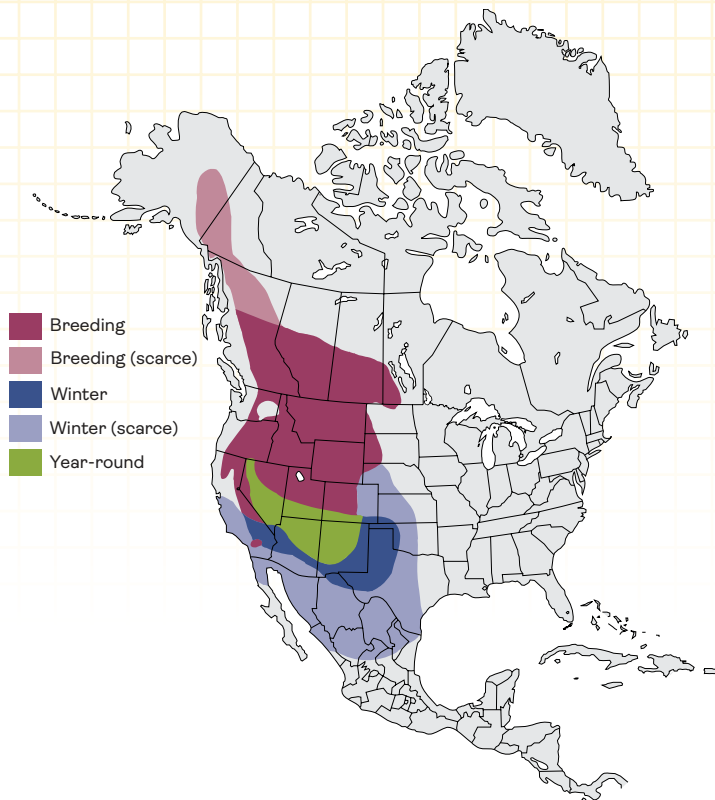
to listen to song and call recordings

Range

The range of the Mountain Bluebird extends from central Alaska in the north, to Manitoba in the east, Texas in the south, and from California to British Columbia in the west. Considered a short-distance migrant, its winter range includes the southwestern United States and northern Mexico. Mountain Bluebirds wander more widely than the other two species, likely in response to weather and food supply.

Mountain Bluebirds are so-named because they—although found in other habitats—will also nest at high elevations, even up

to 12,000 ft (3,600 m) above sea level in mountain meadows and open forests.



Habitat

Like the other bluebird species, Mountain Bluebirds prefer to nest in areas with low groundcover and sparse trees. In addition to the habitat types listed on page 16, they will also nest in sandstone cliffs and prairie coulees. At higher elevations, they prefer open coniferous forests, open meadows, or open woodlands of pinyon pine and juniper.



Diet and Feeding Behavior

Mountain Bluebirds are almost exclusively insect eaters. Food items include grasshoppers, caterpillars, moths, spiders, mayflies, beetles, weevils, bugs, ants, and flies. They have longer wings and hover more frequently while hunting than the other two species—an adaptation, perhaps, to living in windier areas. As with airplanes, wind provides lift, making hovering easier.



On their wintering grounds and during cold/rainy weather, when insects are not available, Mountain Bluebirds will eat berries and fruit, including grapes, currants, elderberry, sumac seeds, chokecherries, saskatoons/serviceberries, silver buffaloberry, and huckleberries.

History

Prior to European settlement of the prairies, Mountain Bluebirds were restricted primarily to areas where they could find nesting habitat in the summer and sufficient food and cover during the winter. It is thought that they nested in the mountains, foothills, and parklands, but in the prairie regions were restricted to

treed river valleys, or where clay banks and sandstone cliffs provided nesting sites.

Habitat for Mountain Bluebirds on the prairies was enhanced with farm settlement, as treed areas increased due to shelterbelt plantings and fire suppression. The Mountain Bluebird population apparently peaked in the 1960s. As with the other two species, their subsequent decline is probably due to habitat loss, pesticide use, reduction of fire, and the introduction of House Sparrows and European Starlings (see pages 59-60 for more information about these two species).

In some local areas, bluebird populations have rebounded because nestbox trails have been established. Over the past decade, there has been a modest but steady increase in Mountain Bluebird populations in the U.S., but the populations are declining in Canada. It is estimated that there are approximately 5 – 6 million Mountain Bluebirds in North America today.

Life Cycle

Male Mountain Bluebirds usually arrive back on the breeding territory first, often several days before the first females start arriving. In the southern parts of their range, they can start showing up

in February while it is usually mid-to late March before they are seen in the north.

Because they arrive so early in the spring on their northern nesting grounds, Mountain Bluebirds risk encountering severe spring snowstorms. While they can withstand storms of short duration, they can't survive prolonged periods of snow cover and low temperatures.



Unfortunately, many die during these severe weather conditions.



MOUNTAIN BLUEBIRD NESTING DETAILS

Clutch Size	Number of Broods	Incubation Period	Nestling Period
4-6 eggs (rarely 2,3 and 8)	1-2 broods	10-18 days (average 14)	18-24 days (average 20-21)

The oldest recorded Mountain Bluebird was at least nine years old. It was banded as an adult near Calgary, Alberta, Canada in 1997 and was recaptured in the same area in 2005.

Predators:

Predators of Mountain Bluebirds include crows, magpies, hawks, falcons, ants, raccoons, weasels, chipmunks, squirrels, and domestic and feral cats.

Western Bluebirds

(*Sialia mexicana*)

Azulejo Occidental (Spanish)

Merlebleu de l'Ouest (French)

Identification

Male Western Bluebirds have brilliant blue heads, throats, wings, and tails, rust-colored breasts, and chestnut back patches. The females are duller, with browner and grayer plumage. Some females are brighter than others. Fledglings and juveniles look like females, except they have spots on their back and streaks on their chest.



Western Bluebird: Male, Female, Fledglings, Juvenile

Songs and Calls

SONGS: a string of various call notes, especially a *kew* note along with other stuttering or whistled notes. The result is a soft, hesitant song that can last 1-2 seconds.

CALLS: The most common call is a soft, quavering *kew* that may be given from a perch or in flight and is often given several times in succession. They also make a harsher, double-noted *che-check* when changing position, and a chattering call when disturbed.

OTHER SOUNDS: both females and males will clack their bills in the presence of predators or other intruders.

CHECK OUT

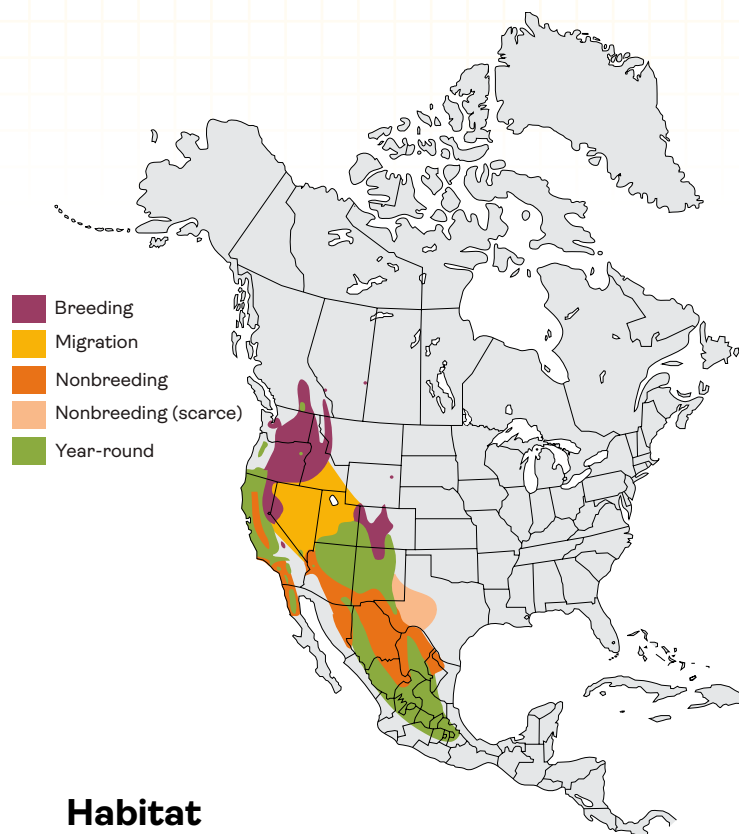
https://www.allaboutbirds.org/guide/Western_Bluebird/sounds
to listen to song and call recordings

Range

The year-round range of the Western Bluebird includes California, the southern Rocky Mountains, Arizona, and New Mexico. The summer breeding range extends as far north as the Pacific Northwest, British Columbia, and Montana to as far south as Central America. The wintering range includes the southwestern United States, central Mexico and the northern Central Americas. It appears that the northern

limit of their wintering range varies from year to year and is dependent on their main food items—juniper or mistletoe berries.

Considered short-distance migrants, northern-nesting Western Bluebirds will migrate for the winter to the southern parts of their range while the birds that nest in the southern part of their range are permanent residents. Resident flocks often move up and down in elevation, moving higher for the nesting season and to lower elevations in the winter where berry crops are abundant.



Habitat

In addition to being found in the types of habitats described on page 16, Western Bluebirds breed in deserts, oak woodlands, and areas that have had some logging. They don't favor the large, open grasslands that are used by the other two species. Some trail monitors provide hanging nestboxes in large city parks for Western Bluebirds (see page 50).

In the fall, Western Bluebirds tend to move to wintering grounds where they can find berries and small fruits, in pinyon-juniper woods, stands of mesquite, oak forests, streamside woods, coastal chaparral, and desert.



Diet and Feeding Behavior

Like the other two species, Western Bluebirds, eat mainly invertebrates, including grasshoppers, caterpillars, beetles, ants, wasps, pill bugs, spiders. They will also eat snails. In the Pacific Northwest (e.g., Oregon), cold rainy weather can take a toll on both adult as well as fledgling bluebirds due to both low temperatures and the lack of active insects.

During the winter, they switch their diet to berries and small fruits, including mistletoe, juniper, elderberries, grapes, raspberries, blackberries, serviceberries, sumac, chokecherries, juniper, and poison oak.

Western Bluebirds tend to perch quite close to the ground, usually on a dead tree branch or a fence post, where they scan the ground and drop down to capture their prey. Interestingly, they also fly low along the ground.



Outside of the breeding season, Western Bluebirds are quite social, joining other Western Bluebirds in large flocks of up to about 100 individuals. These flocks may also contain Mountain Bluebirds, American Robins, and Yellow-rumped Warblers. These flocks are quite nomadic, covering large areas in search of berries and water.



History

Not much is known about the impact of early human settlement on Western Bluebirds. Like Eastern Bluebirds, they likely used wooden fence posts that encircled cattle pastures. However, there have been recent localized population declines, most likely due to loss of habitat and nesting sites because of extensive logging, fire control, pesticide use, over grazing by cattle and sheep, industrialization, the introduction of House Sparrows and European Starlings (see pages 59-60), and urban sprawl.

Regional population declines of Western Bluebirds have prompted conservationists to set up nestbox trails in several western states and British Columbia, Canada. It is not known if these trails are reversing overall population declines, because the

population continues to decrease in some areas. However, population data indicate that, since 1968, there has been a slow but steady overall increase in Western Bluebird populations. It is estimated that there are 5 to 6 million Western Bluebirds in North America.

Ironically, some researchers suggest that Mountain Bluebirds have replaced Western Bluebirds as the most common bluebird in the northwestern U.S. during this century. It is also ironic that two other native cavity nesters have contributed to the decline of Western Bluebirds in some areas: Lewis's Woodpeckers (bottom left), which throw out bluebird nestlings from cavities and Violet-green Swallows, which out-compete them for low-elevation nesting sites, forcing them to move to higher elevations to find cavities. House Sparrows and European Starlings (which are discussed in detail on pages 59-60) cause serious problems for them as well.



Life Cycle

Western Bluebirds start setting up their territories, depending on the region and weather conditions, between mid-February and mid-April, with nest-building activity usually peaking in April. As with the other two species, the breeding season commences earlier in the south than it does in the north.

Mating among birds is very brief and is seldom seen. The following sequence shows Western Bluebirds mating on a nestbox lid.



PHOTOS BY CLAUDE RIOUX

WESTERN BLUEBIRD NESTING DETAILS

Clutch Size	Number of Broods	Incubation Period	Nestling Period
2-8 eggs (usually 5)	1-3 broods	12-17 days (average 14)	18-25 days (average 21)

In California, researchers have found that the date when Western Bluebirds lay their first egg is earlier for pairs using nestboxes than those that use natural cavities.

Predators

Predators of Western Bluebird nests include black bears, rodents (e.g., gray-necked chipmunks, yellow-pine chipmunks, red squirrels, rats), weasels, snakes (e.g., gopher snakes, common king snake), domestic and feral cats, hawks and falcons, ants, and raccoons.

Western Bluebirds (and Mountain Bluebirds) are still hunted on the Zuni reservation in New Mexico. It is estimated that over 10,000 birds are taken each year

for their feathers, which are used in certain ceremonies and rituals. The use of feathers in these ceremonies is considered to be an important part of the Zuni historical tradition.

The oldest known Western Bluebird was a male, at least 8 years and 8 months old when he was found in California in 2008. He had been banded in the same state in 2001.



DARLENE SILLOCK



MYRNA PEARMAN

How You Can Help Bluebirds and Other Native Cavity-Nesting Birds

CHAPTER *four*

We have discussed some of the challenges bluebirds face, including habitat loss, extreme weather, pesticides, predators, cavity competitors, and climate change. The good news is that we can help!

As you now know, bluebirds are cavity-nesting birds that will readily accept artificial cavities – i.e., nestboxes. Helping bluebirds involves building or buying suitable nestboxes, installing them in appropriate habitat, monitoring them on a regular basis, and keeping records of nesting success. Boxes placed along a specific route are called **bluebird trails**, and the people who monitor these trails are called **bluebirders** or **bluebird trail monitors**.

cemeteries, and natural areas that have suitable habitat and are not overrun with House Sparrows.

In some states and provinces, bluebirders have joined together to form local, state/province-wide bluebird groups. The North American Bluebird Society (NABS) is an international organization dedicated to the conservation of all three species of bluebirds. NABS is the publisher of this book.



Some people have a single nestbox in their backyard while others set up bluebird trails on their own property, or in nearby parks, nature preserves, golf courses, farm fields,

Weird Bluebird Homes

Bluebirds are not super fussy about what kind of abode they choose, as long as it provides a roof over their heads and a hole to go into. Bluebirds might choose an old dilapidated box over a nice, brand new one. They've also been known to pick unusual places to nest. While some of these unusual cavities provide safe nesting locations, others can cause them harm. For example, metal mailboxes get too hot, and open-topped plastic pipes can trap them.



A History of Nestboxes

The world's oldest known nestbox is actually a **gourd** (a type of plant that is quite similar to pumpkins, squashes, and melons). Approximately 7,000 years ago, Native Americans in the southwestern parts of the U.S. erected cleaned out gourds to attract the cavity-nesting Purple Martins. Purple Martins were valued because they would alert villagers to intruders, and it was thought that they ate pesky mosquitos. (Note: Purple Martins don't eat mosquitos, but they do eat lots of other insects that fly during the daytime.) Today, many people still set out gourds (natural or plastic) for Purple Martins.



PHOTOS BY MYRNA PEARMAN



Binder Boxes

When the first pioneers settled across North America, they didn't have modern farming equipment such as swathers and combines. Instead, they used machines called binders to wrap bundles of grain stalks. A big spool of twine that was used to tie the grain stalks together was kept in a large tin container on the side of the machine. This container, called a twine box, had two holes in the side. Since the holes were the perfect size for bluebirds to enter and the twine boxes had lids to keep the rain out, they provided ideal nesting sites! Farmers never bothered the bluebirds, because, by the time the binder was needed for harvest, the bluebirds had already fledged. Binders were eventually replaced by more modern equipment, but since the binders were often parked out "in the back forty," they remained viable as bluebird nests for decades.



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Setting Up a Bluebird Trail

Looking after a bluebird trail is fascinating and fun and it is a great way for you to make a difference for the native cavity nesters on your own property or in your own neighborhood. You'll need one of your parents or other adults to help you with this project, especially if you are starting a trail in an area that you have to drive to.



A good way to get started and learn about monitoring a bluebird trail is to share this book with your parents or other adults who will be assisting you with your trail. Another good place to start is in your own community—see if there are any youth-focused organizations (e.g., 4-H, Girl Guides, Boy Scouts/Venturing, Junior Forest Wardens) that are involved with bluebirds.

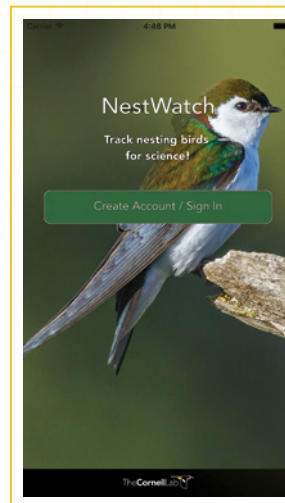
You can also check the North American Bluebird Society's website to get a list of organizations (called affiliates) active in your area, state, or province (nabluebirdsociety.org/affiliates). Contact them to see if there is anyone in your area who has a bluebird trail. You can learn a lot from experienced bluebirders, who will be more than willing to have you join them on

Before starting your own bluebird trail, it is important to realize that a bluebird trail takes time and commitment—both by you and whomever will be assisting you.

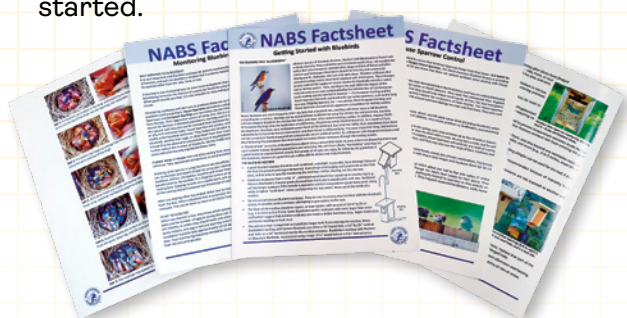
their trail. Members of these groups will also be happy to help you start your own trail.

You may also want to see if there is a Cornell Lab of Ornithology's NestWatch chapter in your area (see nestwatch.org/connect/nestwatch-chapters/). These organizations can help you learn how to use the online NestWatch program.

As a bluebird trail monitor, you'll need to regularly check your boxes during the nesting season to ensure that the boxes are used by the intended occupants and that problems can be dealt with in a timely manner. Monitoring boxes is also necessary to collect data such as which species uses the box, the date the first egg is laid, how many eggs are laid, the hatching date, how many young hatch, how many young fledge, and the cause—if any—of nest failure. Over time, you'll learn which boxes and which locations are the most productive for the bluebirds in your area.



In addition to using this book as a guide, we suggest you download the NABS Fact Sheets (*Getting Started with Bluebirds* and *Monitoring Bluebird Nestboxes*) nabluebirdsociety.org/fact-sheets-plans for additional information on how to get started.



If you're willing to commit to this project, the first step is to figure out where to put your trail. First try to determine if there are any abandoned trails in your area. Sometimes older monitors have to give up their trails, and sometimes youth groups,

such as Boy Scouts, start bluebird trails but eventually abandon them. Adopting an existing trail makes good sense. Many are in great locations, and already have nestboxes installed, although they may need repair or replacement.

It is very important to make sure House Sparrows don't take up residence, so you'll need to prevent them from using your boxes (see pages 59-60) for more information about House Sparrows). If you don't take measures to prevent House Sparrows from raising their families in your boxes, they can soon infest your entire trail. Nestboxes that raise House Sparrows cause more harm than good.



STEP ONE: Habitat Checklist

Ideal places to put boxes are in:

- ✓ areas with short grass and a few scattered trees.
- ✓ rural areas where the boxes are not likely to be bothered by House Sparrows: at least 0.5 mi (1 km) from farm buildings or where cattle are fed.
- ✓ areas that will not be sprayed with pesticides during nesting season.

Once you have found a suitable area, be sure to get permission from the landowners (farmers, ranchers) or land managers (parks, cemeteries, golf courses, other public areas).

It is wise to start with just a few boxes. If you are still enthused and the boxes attract bluebirds or other native cavity nesters, you can always add more boxes later.



2

STEP TWO: Nestbox “Know-How”

Many different box styles have been developed over the past decades, with different designs being preferred in different regions, and some styles chosen simply out of personal preference. There is no one *perfect* bluebird nestbox style!

Contact NABS or your regional, state, or provincial bluebird group to see which boxes work best in your area. The NABS website also has a detailed Fact Sheet (*Nestbox Recommendations*) that summarizes nestbox information. (nabluebirdsociety.org/PDF/NABS%20factsheet%20-%20Nestbox%20Recs.pdf).

You can either buy nestboxes or build your own. If you decide to buy boxes, see if there



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is a local carpenter who can build them for you, or a local bluebird group you can purchase them from. If not, try to purchase them from a wild bird store. Unfortunately, big box and hardware stores often sell poorly designed and constructed boxes.

If you want to build your own, links to nestbox plans can be found on page 46. Whether you buy or build, the following list covers the essential features:

- ✓ The box should be made from 3/4 in - 1 in [1.9 – 2.4-cm] rough, untreated and unpainted cedar or pine/spruce or fir boards. Good quality spruce or fir plywood (5/8 – 3/4 in [1.59 – 1.91 cm]) can also be used. Don't use cardboard, metal, treated lumber, OSB board, MDF (medium-density fiberboard), or any type of particle board.
- ✓ The box must have one panel that is hinged and that opens. It doesn't really matter whether the box opens on the top, side or front; but one panel must open so you can check the box and clean it out after young have fledged, and at the end of nesting season. The panel needs to be secured so predators can't open it.
- ✓ The box should be deep enough so predators can't reach in to get the eggs/nestlings, but not so deep that nestlings will have trouble climbing out. The recommended distance between the bottom of the entrance hole and the floor is 5.5 – 6 in (14 – 15.5 cm).
- ✓ If the materials used are smooth (e.g., pine boards or plywood), then small horizontal cuts (called **kerfs**) should be made under the entrance hole on the inside so the fledging young (especially Tree Swallows) can climb up and out the hole.
- ✓ The roof should be large enough to provide shade and protection from rain. A large overhang will also make it harder for climbing predators to reach inside the entrance hole. NABS recommends at least a 2- to 3-in (5- to 7.5- cm) roof overhang on the sides and a 4- to 6-in (10- to 15-cm) roof overhang in the front over the hole.
- ✓ The entrance hole should be the proper size and the edges should be smooth to prevent wear and tear on the parent's feathers. Larger holes or slots will allow European Starlings to enter.



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RECOMMENDED ENTRANCE HOLE SIZES:

SPECIES	ROUND HOLE	OVAL HOLE	SLOT
Eastern Bluebird	1 1/2 in (3.8 cm) or 1 9/16 in (4 cm)	1.375 in (3.49 cm) x 2.25 in (5.71 cm)	1 3/16 in (3.45 cm)
Mountain Bluebird	1 9/16-in (4-cm)	1.375 in (3.49 cm) x 2.25 in (5.71 cm)	1 3/16 in (3.45 cm)
Western Bluebird	1 1/2 in (3.8 cm) or 1 9/16 in (4 cm)	1.375 in (3.49 cm) x 2.25 in (5.71 cm)	1 3/16 in (3.45 cm)

✓ While many Eastern Bluebird nestboxes have a floor as small as 4 x 4-in (10 x 10 cm), they do equally well with the larger boxes recommended for Western and Mountain Bluebirds.

✓ Some ventilation should be provided, by way of small .5-in (1.3-cm) ventilation holes under the roof. Less ventilation is generally required in northern latitudes where temperatures are colder, or where black flies are a serious problem.

✓ Small drainage holes in the floor should be provided so that any water that gets into the nestbox during rainstorms can drain out (check these holes when cleaning out the box to make sure they are not plugged with nesting debris).

✓ The outside of the box can be left plain or painted/stained. Clear or light colors (e.g., white, light gray or light green) are recommended so the boxes blend into their surroundings and keep the box from overheating (dark colors absorb heat). Don't paint the inside of the box.

✓ Don't put any nesting material in the box—the birds will choose their own suitable materials.

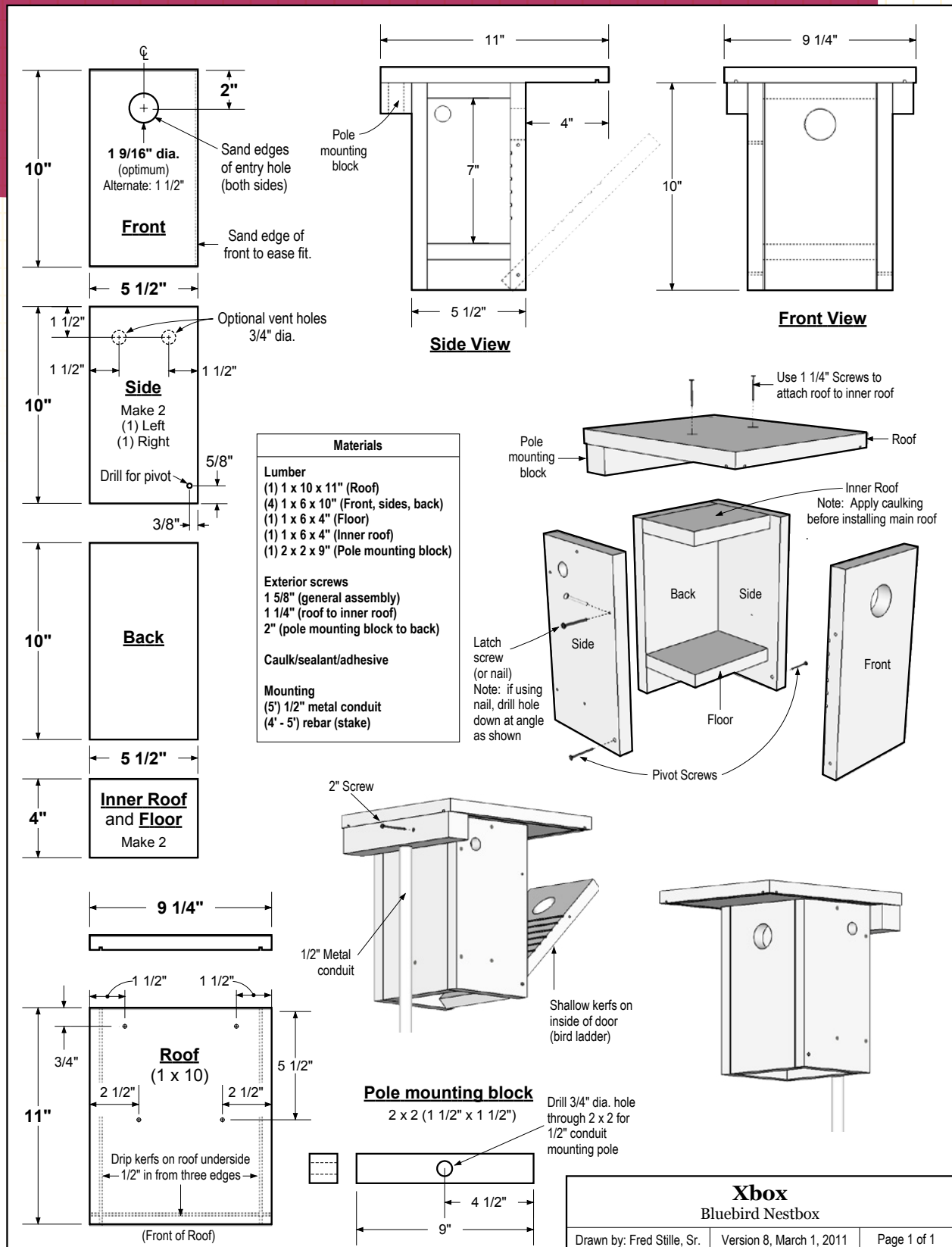
✓ Don't add a perch. Cavity-nesting birds can easily hover in front of the entrance hole, then cling to the front of the box to enter. House Sparrows prefer boxes with perches, and perches can provide larger predatory birds (e.g., American Crows, Black-billed Magpies) with a "step" to stand on to reach in and grab the eggs or nestlings.



Nestbox Designs

The NABS web site has plans for several well-designed nestboxes (nabluebirdsociety.org/factsheets-plans). Nestbox Builder website is also an excellent source for various proven box designs and plans (nestboxbuilder.com).

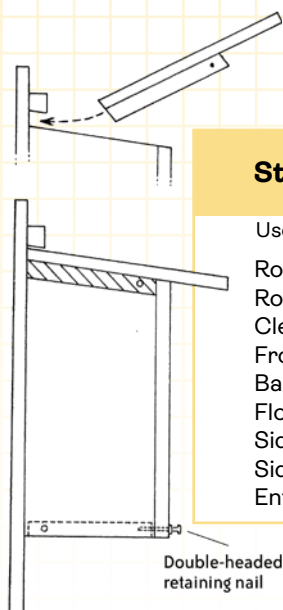
SAMPLE Eastern Bluebird nestbox plan, The X Box



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plan by NestBoxBuilder.com Copyright © 2012 All rights reserved

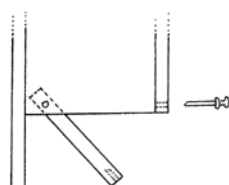
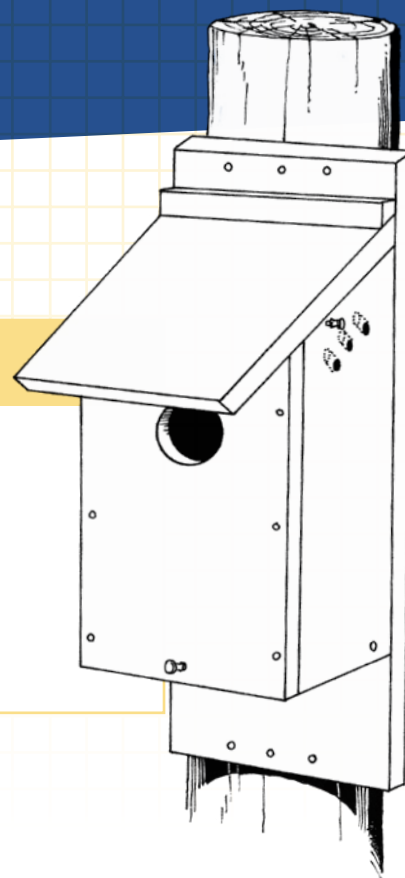
Sample Mountain and Western Bluebird nestbox plans



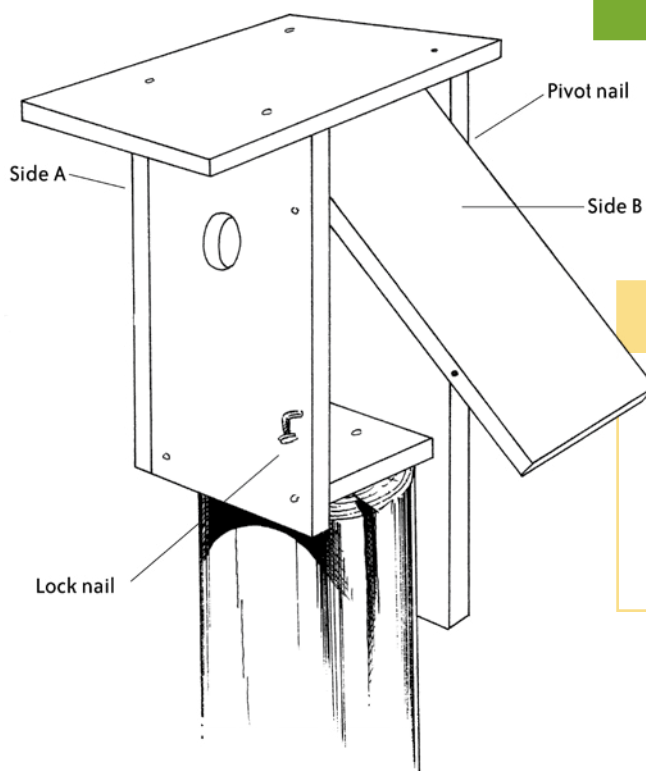
Standard Top-opening Box

Use $\frac{3}{4}$ inch wood

Roof	7 $\frac{1}{2}$ " x 8"
Roof insert	5" x 5"
Cleat	1" x 6 $\frac{1}{2}$ "
Front	6 $\frac{1}{2}$ " x 10"
Back	6 $\frac{1}{2}$ " x 16"
Floor	5" x 5"
Side (front)	5" x 10"
Side (back)	5" x 11"
Entrance hole	1 $\frac{9}{16}$ "



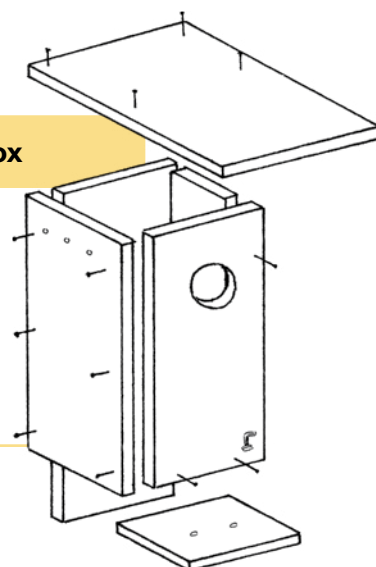
Entrance hole/slot sizes must be exact. If they are even slightly larger, European Starlings can enter.



Jim Potter Side-opening Box

Use $\frac{3}{4}$ inch wood

Roof	7 $\frac{3}{4}$ " x 8"
Front	6" x 10"
Back	6" x 18"
Floor	4 $\frac{1}{2}$ " x 5 $\frac{1}{4}$ "
Side A	6" x 10"
Side B	4 $\frac{1}{2}$ " x 10"
Entrance hole	1 $\frac{9}{16}$ "





STEP THREE: Tips for A Successful Bluebird Trail

If you are starting a new bluebird trail, it is best to put your boxes up either early in the spring, well before bluebirds arrive on their breeding territories, or in the fall. In the southern states, bluebirds start investigating the boxes as early as January. In the more northern parts of the continent, migrating bluebirds usually arrive on their territories from mid-February to late March.

The advantage of putting boxes up in the fall is that bluebirds—either local birds or migrants—will **prospect** (look for) potential nesting sites during this time. The fall is also a good time to get boxes up in northern areas, before the ground freezes, and in areas with high snowfall because deep snow might prevent access in the spring.

In areas where they overwinter, bluebirds may seek shelter in nestboxes outside of the nesting season, by **roosting** in them at night or during severe storms. If bluebirds roost in your nestboxes over the winter, it is a good idea to “winterize” them by covering the ventilation holes and putting a large handful of dry grass, straw, or pine needles in the bottom of the box. However, if mice or squirrels are likely to be a problem, the entrance holes can be plugged for the winter.

Plan your trail to maximize the chances of attracting bluebirds. If you’re lucky, other native cavity-nesting birds may take up residence, which makes your bluebird trail more interesting.

The Cornell Lab of Ornithology has an app (nestwatch.org/learn/all-about-birdhouses/right-bird-right-house) which can help you determine, by region and habitat, which native cavity-nesting species are most likely to use nestboxes in your area. However, there are basically three habitat types that will be used by small cavity-nesting birds:

1. **Bluebirds:** low grass areas with a few scattered trees.
2. **Swallows:** open areas, meadows, and areas near ponds, streams, and wetlands.
3. **Chickadees**, flycatchers, wrens, nuthatches, and titmice: brushy areas or near forest edges.

See Chapter 5 for photos of other native birds that might take up residence in your boxes.

Remember: As much as you might prefer bluebirds to use your boxes, once any native cavity-nesting bird species starts to build a nest in your box, it is against the law to evict them. Mammals, insects (e.g., wasps) and the nests of non-native House Sparrows and European Starlings may be removed.



Mapping Your Bluebird Trail

A map will help you determine how many boxes you need and the best locations for them. To help create your map, check out the aerial view of your area from Google Earth. Once you've decided on box locations, you can record the latitude and longitude coordinates for each box directly from Google Earth.



It is helpful to number each box so you can keep track of what happens in each one. A thick felt pen or other permanent marker can be used. You'll want to number the boxes on both the inside and outside, just in case the outside numbers fade.



Mounting and Placing Your Boxes

As mentioned above, where and how you mount your boxes depends on where you live. However, in all regions, you should

place the box so the entrance hole faces away from the prevailing wind.

In some regions of the Canadian provinces and northwestern US states, where snakes and raccoons are not a problem, boxes can be placed on fence posts and trees.



Western Bluebirds tend to prefer boxes placed on trees over those placed on fence posts. In some areas of the Western Bluebird range, trail monitors even hang boxes high in trees using a special lift pole. These high boxes provide excellent nesting sites in city parks while keeping the boxes safe from disturbance.





However, fence posts and trees are not good places to mount boxes in regions where there are raccoons, chipmunks, squirrels, or climbing snakes. These predators will likely find the boxes and raid the contents (making it a lunch box, not a nestbox!).

In areas where these predators are found, boxes should be mounted on 8-ft. (2.4-m) sections of 3/4-in (1.91-cm) smooth pipe (electrical conduit works well), with the entrance hole about 5 ft. (1.5 m) off the ground. The boxes may need to be further protected with predator guards. Choose a predator guard that will work the best against the predators in your area. For more details, check out sialis.org/baffle.htm, sialis.org/noel.htm and the NABS Fact Sheet (*Predator Control*) nabluebirdsociety.org/PDF/NABSFactsheetPredatorControl.pdf.



Bluebirds have fairly large nesting territories, so boxes should be spaced accordingly. The following is recommended, although boxes can be placed closer together if they are separated by a hill or other obstruction so the birds can't see each other.

SPECIES	NESTBOX SPACING
Eastern Bluebird	100 yards (90 m) minimum to 150 yards (137 m)
Mountain Bluebird	300 yards (275 m) to 500 yards (460 m)
Western Bluebird	100 yards (90 m) minimum to 300 yards (275 m)

(To make these distances easier to visualize, compare them to a football field, which is 100 yards [90 m] long.)

If Tree Swallows or Violet-green Swallows are common in your area, you may want to put up an adjacent nestbox so both species can have a home. The practice of setting two boxes close together is called **pairing**.



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STEP FOUR: Looking After Your Bluebird Trail

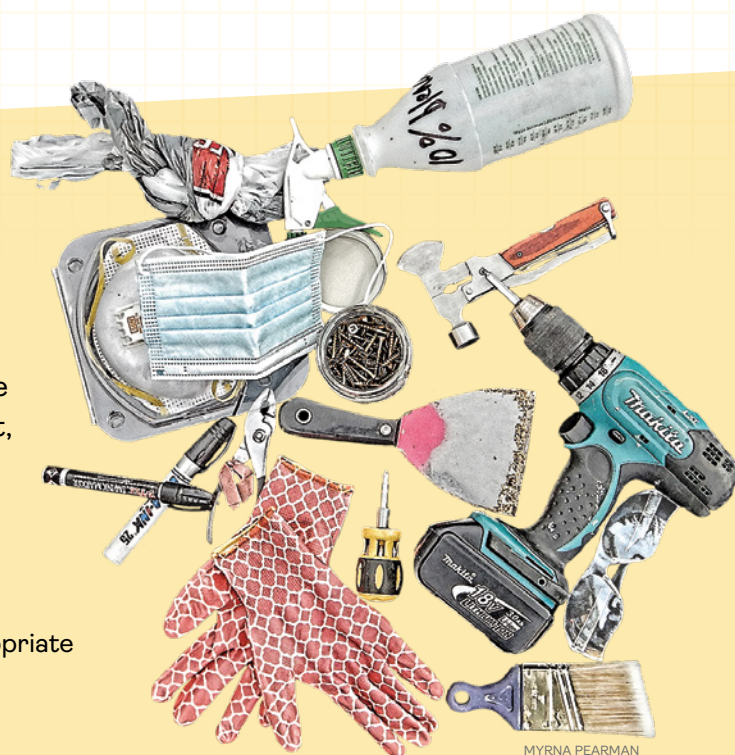
Monitoring a bluebird trail is an exciting and rewarding activity. If you live in the southern United States, you should start checking your boxes on a weekly basis starting in late January/early February. In northern Canada, there won't likely be any activity around the boxes until mid or late March (but if you have plugged the

holes, then those plugs should be removed well before the birds are expected to arrive). However, it is still advisable to start observing even northern boxes in early March to determine if House Sparrows have started nesting. See pages 59-60 for information about dealing with these pests.

You'll want to take some tools along with you when you monitor your trail. A backpack, fishing tackle box or small tool box works to hold the necessary items. It is always a good idea to have a few extra boxes and box pieces in case you need to do repairs or replacements. You should also take along safety items such as a first-aid kit, safety vest, safety glasses, rubber or leather gloves, insect repellent, and disposable hand wipes.

Here is a basic tool kit list:

- ✓ A screwdriver or cordless drill with a supply of appropriate screws
- ✓ Pliers and hammer for minor repairs
- ✓ A putty knife or small scraper for lifting out old nests and to clean out debris and wasp nests
- ✓ A small paintbrush for final cleaning
- ✓ Some metal or plastic laminate hole protectors, in case woodpeckers or squirrels have enlarged the entrance holes
- ✓ A permanent felt pen to number the boxes
- ✓ A spray bottle of 10% bleach solution (1 parts bleach to 9 parts water) to spray boxes that have had mice in them, and for end-of-season cleanout
- ✓ Old grocery bags or other receptacles for disposing of used nests, abandoned eggs or dead birds
- ✓ A dust mask for cleaning out nesting material at the end of the season.



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RAY HARRIS

Staying Healthy

While monitoring a bluebird trail carries a low risk, it is important to be aware of two potential diseases:

- **Lyme Disease:** is a serious disease transmitted by deer tick bites. If deer ticks or other disease-causing ticks are a problem in your area, reduce your risk by covering up as much as possible:
 - Tuck long pants into your socks.
 - Use insect repellent.
 - Consider getting socks, pants or shirts that are impregnated with **permethrin**, a natural pesticide that repels ticks (one brand is BuzzOff™).
 - Check your clothing and remove any ticks you find.
 - Check your body and then shower as soon as you return home.
 - Correctly remove a tick if you find one. Apply hydrogen peroxide to the bite area (search YouTube™ for removal instructions).
 - Check with your local health authority for updated information and precautions.
- **Hantavirus:** Hantavirus pulmonary syndrome (HPS) is a rare but serious lung disease associated with rodents. It is caused by a virus transmitted in urine, saliva, or droppings of infected deer mice and some other wild rodents (e.g., cotton rats, rice rats, white-footed mice, and red-backed voles). Breathing in the dust stirred up when you evict mice can result in exposure. One option is to just leave the mice alone, because—although

rodents will sometimes eat bluebird eggs and young—they are important prey for many different species of predators. If you can put up additional boxes and leave a few for the mice, you have contributed to biodiversity.

If you decide to evict the mice, first soak the contents with a 10% bleach solution and then, using rubber gloves and standing upwind, slowly and carefully remove the wet material. Some trail monitors use a N95™ dust mask because it has a HEPA filter and provides protection against airborne bacteria and viruses. Check with your local health authority for updated information and precautions.

Checking Your Boxes

An important (and fun) part of monitoring a bluebird trail is looking into your nestboxes to see what is going on inside. Although some people fear that opening a box will cause the birds undue stress, or even to abandon their nest, checking nestboxes carefully and correctly will not cause any harm. Boxes should be checked weekly until the young hatch. After that, you can check them a maximum of two to three times a week. Never check boxes during cold or rainy weather, or early in the morning during the time when the female is laying eggs. It is also important to stop box checks when the young are almost



ready to fledge, because they may become frightened and attempt to jump out of the box before they are mature enough to fly and look after themselves. This cut-off date for box checks varies between species (see page 57).

How to Check a Nestbox

- Walk up to the box quietly.
- Stand to one side of the box so the female can escape through the entrance hole if she is spooked.
- Tap gently on the box or speak softly.
- Slowly open the box and peek inside (if the box is too high, a small mirror can be held above the nest - see photo below).
- Make a mental note of what you see. Do not touch the female, eggs, or babies.
- Gently and quietly shut the panel and make sure the fastener is secured.
- Move away quickly and quietly to a safe location where you can enter your information into your field notebook or app (if predators are likely to follow your track, leave the box the opposite way you came so your trail does not “stop” at the box).
- If the young have fledged, clean out the old nesting material (follow the safety precautions noted on page 53).



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Being Safe on the Bluebird Trail

Check the weather forecast before you head out and have your route pre-planned. Make sure that your parents or another responsible adult knows that you are out on your trail and when to expect your return. Make sure your cellphone is charged. Bring along food as well as extra water. If your bluebird trail is along a public road, be sure to take all necessary safety precautions: park in a safe place, wear a safety vest, and always be mindful of your personal safety.

Record Keeping

You can be a citizen scientist by keeping records on the nesting cycle of the native species that inhabit your boxes. You can either collect your own notes out in the field using pencil and paper, or record data electronically using Cornell Lab of Ornithology's Project NestWatch program app.

Collecting Data by Paper

- A. **Field Notebook:** You can just use a small notebook to take notes. Sample forms used by other organizations can be downloaded from NestWatch, NABS and other organizations (see Resource pages 71-72 for links).

- B. **Summary Sheet:** At the end of the season, you may want to summarize your trail data and report your results to your state/provincial bluebird organization, to NABS, or to Cornell via their online form (see Resource pages 71-72 for link).

Collecting Data Electronically

Project NestWatch App: This online app enables you to record your observations in real time onto your mobile device and allows you to map your nest sites using your phone's GPS. Data can be entered and saved even in areas with no Wi-Fi or cell service. <https://nestwatch.org/connect/news/download-the-nestwatch-mobile-app/>



Banding

Some bluebird trail monitors have a special permit to band birds. Bird bands are small, aluminum rings, each etched with a specific number, that are placed on a bird's leg. The bands are issued by the Canadian Wildlife Service (CWS) and the U.S. Fish and Wildlife Service (USFWS), and the data related to each bird receiving a band must be submitted by banders to a CWS or USFWS database. Metal bird bands

provide a way to identify an individual bird if it is later recaptured or found dead. Some researchers also add color bands. These small plastic bands are put on in addition to the silver band so that the band combinations can be used to identify the bird, thus saving the time involved (and stress to the bird) of having to recapture it to read the band number.

The training and permitting process to obtain a banding permit is complicated. If you are interested in banding, contact a local bluebird organization, bird banding station, or your nearest nature center to see if there are any local banders willing to band your birds.



Finding a Banded Bird

If you find a banded bird, it is important to submit the band number to officials so the data can be retrieved. It is interesting to find out where the bird was banded etc. Only licensed bird banders can actually handle live birds, so you'll need to contact a licensed bander to trap the bird so its band numbers can be read. See page 72 for contact information.

Observations and Notes

Being out on a bluebird trail gives you a chance to get outdoors and observe the natural world. Take the time to look around as you monitor your bluebird trail. Bring a bird field guide and binoculars and learn about the other species that call your area home. You can simply enjoy what you see, document your observations in your field notebook, or upload them to popular apps such as eBird (ebird.org).

eBird

Cornell Lab of Ornithology's Merlin app (merlin.allaboutbirds.org/) has a bird ID wizard that will identify birds from cell phone photos or sound recordings. This program will also allow you to learn about the birds in your area and even help you create a bird "life list."



The iNaturalist (inaturalist.org/) app, joint initiative of the California Academy of Sciences and National Geographic, is a tool for everyone to become a citizen scientist by recording and uploading images of all living things.



Nature Journaling

How about bringing a sketchbook or journal along when you monitor your bluebird trail, so you can create art while you are out enjoying nature? Or maybe you would rather write about your observations, feelings, and experiences?

Julie Zickefoose, a well-known bluebird enthusiast, nature writer, and artist has kindly shared this page from one of her nature journals. You can see more of her art and writing at juliezickefoose.com.

In Canada, Robert Bateman—one of Canada's most famous nature artists—has supported an initiative to support sketching while out in nature. More details can be found at batemanfoundation.org/nature-sketch.

We have listed other journaling resources on page 72.

Remember: experiencing and appreciating the beauty of nature is the best part of bluebirding. Whether or not you draw, write, or even collect data, engage your senses of sight, sound, smell, and touch so you can really appreciate the wonders of our natural world.



Below are some of the activities you can watch for around your nestbox and record in your field notes.

1. **Territory:** the area around the nest that a pair of birds protect. Male bluebirds tend to protect the general territory, while the female will most vigorously defend the box itself.
2. **Courtship:** activities that a pair of birds go through to communicate that they want to bond and raise a family together.
3. **Nest Building:** Each bird species builds a distinctive nest. Become familiar with the various styles of nests with the help of the NestWatch app (nestwatch.org). Observe what stage the nest is at in your field notes (e.g., type of nesting material, progress of the nest, etc.).
4. **Egg Laying:** most native cavity-nesting species lay one egg per day until their **clutch** is complete. Record the number of eggs seen in each box. Note if there is anything unusual (white eggs, mixed clutches etc.). Learn to identify eggs by color, shape, spots, etc.
5. **Nestling Period:** It is important to document the age of the nestlings, which is fairly easy to do based on the charts on page 23. By counting backwards from their current age to zero (the day they hatch is considered Day 0), you can determine the hatching date.

It is important that you stop monitoring an active bluebird nest once the young have reached the age where they might jump out of the box if disturbed. If they jump out before they are mature enough, they will not likely survive. For this reason, do not check boxes after

the young are these ages: Eastern Bluebird – 13 days, Western Bluebird – 13 to 14 days; Mountain Bluebird- 14 to 15 days. If you've kept track of their ages on previous visits, you'll know when it is time to leave the box alone. If you aren't sure of the nestling ages, check the nestling age chart on page 23.

While you don't want to approach the box during these last days, you can still observe the box from a distance, with binoculars, to make sure that the adults are still feeding the young. This is an interesting time to distance watch, since you'll likely see the young sticking their heads out to be fed, and you might even get lucky enough to observe them fledging.

If you find cold eggs or dead young, see Abandoned Nests on page 59

6. **Post-fledging Period:** Once the young have fledged from a box, it should be cleaned out. Your previous records will confirm which species were using which box, so you'll be able to collect the last piece of data – number of young fledged. Successful nests are typically completely flattened and there will be a buildup of bird dandruff in and beneath the nesting material. Sometimes, one or more young do not survive and you will find their carcass(es) still in the nest. A nest is considered a failure only if *all* the young have died. Unfortunately, the cause of nest failure is often difficult to determine. If you find cold eggs or dead young, see Abandoned Nests, page 59. Using personal safety precautions (see page 53) place the eggs/dead young in a garbage bag and dispose of with your household garbage. Don't throw the

nest remains out on the ground during nesting season, as the smell might attract predators.

At the end of nesting season, do a final check of all your boxes, and clean them out to get them ready for next year. Using gloves (and mask if you deem it appropriate) and with the help of a scraper, lift/pull out the old nesting material. Scrape the floor clean and brush out any remaining dust. If the nest has been successful, toss the old nest on the ground. If there are unhatched eggs or dead young, place the material in a plastic bag and remove it from the area. For more details on nestbox cleaning, see sialis.org/clean.htm.

Some bluebird trail monitors in southern areas turn their boxes into winter roosts by plugging the ventilation holes and putting in a handful of clean, dry grass

or pine needles as insulation. These boxes need to be revisited first thing in the spring and cleaned out. If mice are likely to take up residence, you will have to decide if you want to plug the holes to keep them out.

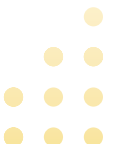
Some bluebird trail monitors wait until the following spring to clean out their boxes because the predators of some nest parasites (e.g., jewel wasps) lay their eggs in the blowfly larvae that infest the nest. These parasites overwinter inside the larvae, then resume development in the spring. Leaving the material in place will allow these important pest controllers to do their work. Just remember to clean out the boxes before the nesting season starts.



Dealing With Challenges on Your Bluebird Trail

It is important to remember that bluebirds are wild, native birds. They're not pets. Like all wild creatures, bluebirds are part of the amazing, complicated, and sometimes "unfair" web of life. No matter how carefully you monitor and tend "your" bluebirds, some will not survive. Although you will want to minimize losses by having well-designed and well-placed boxes that you monitor on a regular basis, be prepared for some losses and disappointments.

Some challenges, such as dealing with injured or orphaned young, replacing wet nests (when the young are still alive) and fostering (moving the young to other boxes with live young of similar age) can be legally dealt with only by experienced adult bluebird trail monitors who have specific permits. In these situations, contact a local experienced bluebird, bird bander, or your nearest wildlife rescue for advice and assistance.



Abandoned Nests

If you are sure that a nest has been abandoned (e.g., the eggs are broken, the female has been found dead, no female has been seen for several days, the nest is full of dead young), it is legal to empty the box out. However, you must make absolutely certain that it has been abandoned before taking action. Remember that birds only lay one egg a day until their clutch is complete, so you may not see them around during egg laying. Sometimes adults are secretive and will sneak out of the box before you can see them, or they might be off feeding, getting a drink, resting, etc.

Using personal safety precautions (see page 53), remove the contents of an abandoned nest, place in a garbage bag and dispose of with your household garbage. Do not throw the nest remains out on the ground, as the smell might attract predators.

If you observe that there are no adults around and, when you check the nest, the young are obviously weakened and starving, call a local bird bander or rehabilitation centre for instructions on what to do. Ideally, an expert can remove the birds and take them to a rehab centre and/or foster them out to boxes with healthy nestlings of the same age.



Competitors

Non-native Species

The two most problematic non-native competitors are House Sparrows and European Starlings. Bluebird trail operators must be vigilant to prevent these two pest species from using any of their nestboxes.

European Starlings: Luckily, European Starlings are too large to fit into a bluebird nestbox as long as the entrance hole is the correct size (see page 46). If the hole gets enlarged (e.g., by woodpeckers or squirrels), cover it with a correctly sized metal or laminant hole guard, or replace the front panel.



House Sparrows : Unfortunately, House Sparrows are small enough to fit in a bluebird nestbox. They will often kill bluebirds or other rightful nestbox occupants. Responsible bluebirders don't allow House Sparrows to use their nestboxes.

Here are some tips to discourage these pests from taking over your boxes:

- Do not feed House Sparrows, which prefer cheap birdseed mixes, cracked corn, millet, and milo.
- Place nestboxes away from areas where House Sparrows are abundant, such as farmyards, feedlots, and urban areas.
- Learn to recognize House Sparrow adults and their nests and eggs.
- If House Sparrows show up, deter them by installing a "Sparrow Spooker." Details can be found at sialis.org/sparrowspooker.htm.

- If House Sparrows are not deterred by a Sparrow Spooker and it is early enough in the season that no other native birds have started nest building in the vicinity, remove the sparrow nesting material. Unfortunately, male House Sparrows become attached to a box, not a mate, so they will likely quickly rebuild after their nest is removed. If the males don't give up after two or three removals, take the box down and move it to a more suitable location. Be warned, also, the males may move to adjacent boxes and/or kill the occupants after their own nests have been cleaned out.
- Call on an experienced bluebird trail monitor to help remove House Sparrows.



DAVE KINNEER



PHOTOS BY MYRNA PEARMAN

Native Species

Bluebirds and other native cavity nesters will often compete for nesting sites.

House Wrens: These small birds are quite aggressive and territorial. They will take over bluebird nests, peck eggs and even throw nestlings out of the box, then fill the box with sticks. To reduce the attractiveness of nestboxes to House Wrens, place them away from brushy areas. Instead, choose short grass areas with only a few scattered trees, at least 50 – 100 yards (45 – 90 m) to 100 yards (90 m) away from shrubbery.



PHOTOS BY MYRNA PEARMAN

Tree Swallows and Violet-green Swallows

Swallows: These aerial acrobats are common cavity nesters and will compete vigorously for nestboxes. Many trail monitors have had success allowing both bluebirds and swallows to nest side-by-side by setting up an additional box close by [5 – 25 ft. (1.5 – 7.5 m) to 25 ft. (7.5 m)]. These paired boxes (see photo on page 51 6.15) allow both species (and others like chickadees) to nest. If paired boxes are more than 25 ft. (7.5 m) apart, you may get swallows in both boxes.



PHOTOS BY MYRNA PEARMAN



DAVE ELPHINSTONE

Violet-green Swallow

Predators

As previously mentioned, it is important to remember that native predators are a part of the natural web of life. Without predators, the balance of nature would not be maintained. Bluebirds, as part of this web of life, eat insects, spiders, and fruit. And sometimes bluebirds

get eaten and their nests get raided by native predators, including bears, snakes, squirrels, chipmunks, hawks, owls, weasels, and raccoons. However, it is important to make sure that your boxes do not place the nesting birds at increased risk, so do your best to ensure that your boxes are as safe as possible from nest robbers.



From top down (left to right):
Least Chipmunk, Red Squirrel, Raccoon,
Raccoon guard, Bullsna~~k~~e, Long-tailed
Weasel.





MYRNA PEARMAN

The Special Problem of Cats

Free-roaming domestic and feral cats are efficient and catastrophic non-native predators of wildlife. Even a well-fed cat will kill both adult and fledgling birds of all species (along with reptiles, amphibians, and small mammals).

Do not set up a bluebird trail in areas where outdoor cats are known to roam, because the cats will inevitably kill the adults, usually when they are feeding on the ground. If they kill adults with an active nest, the baby birds will starve to death inside the box. Cats can also easily kill the young bluebirds right after they fledge, especially if they have landed on the ground.

Several organizations in North America are working to raise awareness about the problem of free-roaming cats. For more information, see: abcbirds.org/program/cats-indoors/cats-and-birds or catsandbirds.ca/.

Other Challenges

Depending on where you live, bluebirds may face many different competitors and predators, including bears, jays, raccoons, raptors, snakes, and numerous insect issues ranging from ants and fire ants to wasps, black flies, blowflies, mites, etc.

It is beyond the scope of this book to address all these challenges, so please check out sialis.org/predatorid.htm for an extensive troubleshooting chart and more information on how to deal with various problems. This NABS Fact Sheet (*Predator Control*) also offers tips on preventing predators from raiding your nestbox: nablubirdsociety.org/PDF/NABSFactsheetPredatorControl.pdf.



Final Words

You can help boost the population of bluebirds in your community by establishing and monitoring a bluebird trail.

Some keys points to consider and remember:

- See if there are any bluebird organizations or bluebirders in your area who can help you.
- Choose high quality boxes that can be easily opened.
- Choose appropriate habitat in which to place your boxes.
- Start with just a few boxes and grow your trail slowly.
- Install boxes so they don't put the nest occupants at an increased risk of predation.
- Monitor your boxes regularly (while making sure you stay healthy and safe).
- Deal with House Sparrows immediately.
- Deal with other problems to the best of your ability.
- Collect data on the nest occupants.
- Draw and/or write about nature while you are out on the bluebird trail.
- Clean the boxes out at the end of each fledging (if possible) and at the end of the season.
- Report your data.
- Share your stories! (see below)
- Plan for next year!

Share Your Stories!

I would love to hear from any young people who are involved with bluebirding! Please feel free to contact me at myrnapearman.nature@gmail.com.

Glossary

For a more detailed glossary, see sialis.org/glossary.htm.

Bluebird Trail	A set of nestboxes set out along a prescribed route
Bluebirder/ Bluebird trail monitor	A person who looks after a bluebird trail
Brood (verb)	To keep nestlings warm by sitting on them
Brood (noun)	A family of baby birds sharing the same parents
Brood Patch	A patch of bare skin on a female bird, used to keep eggs and nestlings warm
Call	A sound issued by a bird to keep in touch with members of its flock
Cavity	A hole, usually in a tree used by a cavity-nesting bird
Clutch	The total number of eggs laid by a bird during a single nesting period
Down feathers	The layer of fine feathers found under exterior feathers
Fecal sac	A mucous membrane that holds the waste material of a baby bird
Fledge	To leave a nest
Fledgling	A bird that has just left the nest and is still dependent on its parents for food
Gourd	A large fruit with a hard skin, often referred to as the “world’s oldest birdhouse”
Hover	To remain in one place in the air
Hybridize	When two different species mate, resulting in fertile offspring
Incubate	To keep eggs warm by sitting on them
Invertebrates	Invertebrates are animals without a backbone or bony skeleton
Juvenile	A young bird that is capable of looking after itself
Light-level geolocator	A tracking device that uses daylight to estimate location
Mate feeding	When a male brings food items to a female during courtship
Migrant	A bird that moves between its breeding and over-wintering ground
Molt	To shed old feathers so new ones can grow in
Nestling	A bird that is still in the nest and dependent on its parents
Permethrin	An insecticide that acts like a natural extract from the chrysanthemum flower
Plumage	The feathers that cover the body of a bird
Primary cavity-nesting bird	A bird that can excavate its own nesting or roosting cavity
Prospecting	When a bird checks out potential nesting sites, for possible use the following season
Resident	A bird that remains in one area all year-round
Roost	A place where an individual or a group of birds sleeps or rests
Song	Sounds issued, usually by male birds, to attract a mate or defend a territory
Secondary cavity-nesting bird	A bird that requires a pre-existing cavity to nest in



Buffleheads are cavity-nesting ducks. Within 24 to 36 hours after hatching, the mother duck leaves the box and, while waiting on the ground below, calls to her ducklings. The little balls of fluff climb up the inside of the nest cavity and leap out. They are so light and fluffy that they are not hurt when they land.

Other Nestbox Users

CHAPTER five

Bluebirds are not the only species that will use a nestbox; there are also other small native cavity-nesting birds that may take up residence. The species that might be attracted will depend on where you live in North America and the type of habitat that is found in your area (e.g., forest, desert, mountains, lakes, etc.).

More details about other cavity-nesting species, habitat details and box plans can all be found at nestwatch.org and sialis.org.

Chickadees

- 1 Black-capped Chickadee
- 2 Boreal Chickadee
- 3 Carolina Chickadee
- 4 Chestnut-backed Chickadee
- 5 Mountain Chickadee



Flycatchers

- 1 Ash-throated Flycatcher
- 2 Great Crested Flycatcher



Nuthatches

- 1 Brown-headed Nuthatch
- 2 Pygmy Nuthatch
- 3 Red-breasted Nuthatch
- 4 White-breasted Nuthatch



Swallows

- 1 Tree Swallow
- 2 Violet-green Swallow



Titmice

- 1 Black-crested Titmouse
- 2 Juniper Titmouse
- 3 Oak Titmouse
- 4 Tufted Titmouse



Warblers

- 1 Prothonotary Warbler
- 2 Lucy's Warbler



Wrens

- 1 Bewick's Wren
- 2 Canyon Wren
- 3 Carolina Wren
- 4 House Wren



Purple Martins are also native cavity-nesting birds, but they require special apartment-style houses to live in. For more information about Purple Martins, check out the Purple Martin Conservation Association at purplemartin.org/.



As mentioned on page 10, some birds, like certain species of ducks, woodpeckers, kestrels, and owls, will be attracted to large nestboxes. These species are too big to fit into a standard bluebird box. For more information about larger cavity nesters and box plans check out

Cornell's NestWatch website nestwatch.org or this downloadable book: *Nest Box Guide For Waterfowl: Alberta Edition*: ab-conservation.com/downloads/educational-materials/brochures/nest_box_guide_and_instructions.pdf

SOME EXAMPLES OF LARGE SECONDARY CAVITY-NESTING BIRDS

- 1 Wood Duck
- 2 Common Goldeneye
- 3 Hooded Merganser
- 4 Northern Flicker
- 5 American Kestrel
- 6 Northern Saw-whet Owl
- 7 Pygmy Owl
- 8 Western Screech-Owl



There are other bird species that aren't true cavity nesters (e.g., Great Horned Owls, American Robins, Mourning Doves, Eastern Phoebe, Barn Swallows), but can be attracted to nest on special brackets and/or baskets. Information about these

species has been summarized by the Cornell Lab of Ornithology and can be accessed from their website: nestwatch.org/learn/all-about-birdhouses/right-bird-right-house/

Resources and More Information

CHAPTER

six

BLUEBIRDING BASICS

Three of the best online sources of information about bluebirds are:

- NABS website - nabluebirdsociety.org (check the links to affiliate organizations)
- Bet Zimmerman Smith's website - sialis.org
- Cornell Lab of Ornithology's NestWatch website - nestwatch.org

BOOKS

There have been many books written about bluebirds. A good summary to help you choose which ones are right for you can be found at sialis.org/books.htm.

CATS

- <https://abcbirds.org/program/cats-indoors/cats-and-birds/>
- catsandbirds.ca

CITIZEN/COMMUNITY SCIENCE & BIRD IDENTIFICATION APPS & OPPORTUNITIES

- Canada: ic.gc.ca/eic/site/063.nsf/eng/h_97169.html
- United States: <https://www.epa.gov/citizen-science/how-find-citizen-science-projects>
- Christmas Bird Count: audubon.org/conservation/science/christmas-bird-count
- Great Backyard Bird Count: birdcount.org
- eBird: ebird.org

- iNaturalist: inaturalist.org
- Merlin: merlin.allaboutbirds.org
- North American Breeding Bird Survey: usgs.gov/centers/eesc/science/north-american-breeding-bird-survey?qt-science_center_objects=0#qt-science_center_objects
- Partners in Flight: <https://partnersinflight.org/>
- Young Birder Clubs: ebird.org/about/resources/for-young-birders/young-birder-clubs

DOWNLOADABLE BOOKS ABOUT BLUEBIRDS

- *Bluebirds in Texas*: tpwd.texas.gov/publications/pwdpubs/media/pwd_bk_w7000_0512.pdf
- *Children's Mountain Bluebird Activity Booklet*: mountainbluebirdtrails.com/Final%20PDF%20of%20the%20book.pdf
- *Mountain Bluebird Trail Monitoring Guide*: rdnr.ca/wp-content/uploads/2021/01/Mountain-Bluebird-Trail-Monitoring-Guide1.pdf
- *Monitoring Your Bluebird Trail in California*: https://www.cbrp.org/wp-content/uploads/2021/07/monitor_guide.pdf
- Back issues of the NABS quarterly journal, *Bluebird* (formerly *Sialis*) are available as downloadable PDFs from the NABS website at nabluebirdsociety.org

DOWNLOADABLE BOOKS & INFORMATION ABOUT OTHER CAVITY-NESTING BIRDS

- Nest Box Guide for Waterfowl: Alberta Edition: ab-conservation.com/downloads/educational_materials/brochures/nest_box_guide_and_instructions.pdf
- Cavity-Nesting Birds of North American Forests, Agriculture Handbook 511: gutenberg.org/files/49172/49172-h/49172-h.htm
- Cavity Trees for Wildlife: lrconline.com/Extension_Notes_English/pdf/cvtytrs.pdf

FINDING BLUEBIRD ORGANIZATIONS & TRAIL MONITORS IN YOUR AREA

nabluebirdsociety.org/affiliates/

KEEPING NESTBOX TRAIL RECORDS (SAMPLES AND DOWNLOADABLE FORMS)

- NABS: nabluebirdsociety.org/nestbox-data
- NestWatch: play.google.com/store/apps/details?id=edu.cornell.birds.nestwatchmobile
- Project NestWatch (Cornell Lab of Ornithology, need to be a member to participate): nestwatch.org/nw/data#!
- End-of-Season Summary Forms: nestwatch.org/nw/data#!

MEALWORMS

sialis.org/raisingmealworms.htm

NATURE JOURNALING & FIELD SKETCHING

- academy.allaboutbirds.org/product/nature-journaling-and-field-sketching
- batemanfoundation.org/nature-sketch
- johnmuirlaws.com
- juliezickefoose.com

NESTBOX PLANS

- NABS: nabluebirdsociety.org/PDF/NABS%20factsheet%20-%20Nestbox%20Recs.pdf
- Nestboxbuilder: nestboxbuilder.com
- NestWatch: nestwatch.org/learn/all-about-birdhouses/right-bird-right-house

SOCIAL MEDIA

Many NABS affiliate groups have their own social media sites.

Facebook: Do a search for other groups that might interest you:

- NABS: facebook.com/NorthAmericanBluebirdSociety
- Bluebird-L: facebook.com/groups/111295438893211
- Native Cavity Nesting Birds of North America: facebook.com/nativecavitynestingbirds

TROUBLESHOOTING

Predator/Problem identification and solutions: sialis.org/predatorid.htm

WEBSITES FOR MORE INFORMATION ABOUT CAVITY-NESTING BIRDS

- Audubon: audubon.org
- All About Birds (Cornell Lab of Ornithology) allaboutbirds.org/guide
- Birds of the World (there is a fee to subscribe) birdsoftheworld.org/bow/home
- Sialis.org

WHAT TO DO IF YOU FIND A BANDED BIRD

- United States: https://www.usgs.gov/faqs/i-found-or-killed-a-bird-a-band-or-color-marker-around-its-leg-what-do-i-do?qt-news_science_products=0#qt-news_science_products
- Canada: <https://www.canada.ca/en/environment-climate-change/services/bird-banding/how-to-report.html>

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About the Author

I remember my father rushing into our farmhouse one spring day, breathless with excitement after seeing a Mountain Bluebird. It was the first bluebird he'd seen since his childhood. He piled us kids into the old pickup truck and roared along a dusty trail to the far pasture. Sure enough, there it was, a dazzling male bluebird! I remember being smitten with the pure beauty of such a creature.

Once back home, Dad contacted a local bluebird enthusiast. The very next day Mr. Melvin Baumbach showed up at our door, nestboxes in hand. He told us all about bluebirds and helped us put a few boxes up. We were excited that one pair of bluebirds nested that year. Each spring thereafter, Dad helped us build a few more boxes and, to this day, I still maintain a small bluebird trail on the family farm in Alberta, Canada.

Bluebirds have been a part of my life since I was a young teen.

I eventually met “Mr. Bluebird” of Canada, Charlie Ellis. Charlie and his sister Winnie operated North America’s largest bluebird trail near Lacombe, Alberta, Canada. Their legacy lives on in Ellis Bird Farm Ltd., an organization dedicated to the conservation of bluebirds and other native cavity-nesting birds.

In 1987, I was fortunate to become the Biologist at Ellis Bird Farm. For the next 33 years, I was immersed in bluebirds—including monitoring a large trail, collecting data, banding, writing books and articles about bluebirds, delivering bluebird programs to children and adults alike, and being involved in exciting research projects involving bluebirds as well as other native cavity-nesting birds.

It was Winnie Ellis who first told me about the North American Bluebird Society (NABS). I joined the society in 1984, shortly after it was founded. In the decades since, it has been an honor to be a member of NABS and to have hosted two NABS conferences at Ellis Bird Farm.

I am thrilled to be able to share my passion about the birds that I’ve watched and studied for so many decades. I hope you’ll be inspired, as I was, to become a young bluebirder!



MYRNA PEARMAN



CAROLYN SANDSTROM

Bluebirds

symbolize love, hope,
and happiness.



If you want to learn about these beautiful birds, this book is a great place to start.

Biologist Myrna Pearman has been working with children and bluebirds for over four decades. She wrote this guide to introduce young audiences to all three species of bluebirds. It is filled with information on:

- what bluebirds look like
- what they eat
- their nesting habits
- how to set up and maintain a suitable, safe nestbox
- how to create and monitor a bluebird trail

It also includes stunning photographs submitted by photographers and bluebird lovers from across the United States and Canada.



This book was written under a grant from the North American Bluebird Society (NABS). NABS is a non-profit organization that exists to raise awareness about North America's iconic bluebirds. Since 1978, NABS has been promoting conservation of bluebirds and other native cavity-nesting birds through education, conservation, and research. Find out more online at www.NABluebirdSociety.org.

