

JACKSON HOLE



WILDLIFE
FOUNDATION

Mountain Bluebird Nestbox Monitoring Guide



Jackson Hole Wildlife Foundation

PO Box 8042
Jackson, WY 83002
307-739-0968



Mountain Bluebird Backyard Monitoring Guide

Thank you for your interest in providing nestboxes for your local Mountain Bluebirds! Enclosed is some information we think will be helpful in procuring and placing your nestbox(es) to help provide the best possible home for bluebirds or other native cavity nesters.

What makes a good nestbox?

- Untreated, unpainted wood that is at least $\frac{3}{4}$ " thick helps keep the nest insulated and prevents exposure to chemicals that are potentially dangerous to young nestlings.
- Galvanized screws provide the best seal and ease of maintenance
- A sloped roof that overhangs the front and sides of the box helps keep the nest dry and protected from the elements.
- A nest box that opens from the top, front, or side allows monitoring of the contents throughout the season and easy cleaning at the end. The door should have a secure latch mechanism to prevent access by potential predators.
- For Mountain Bluebirds, the entryway should be a $1\frac{9}{16}$ " round opening

For more information about what makes a good nestbox, check out [Features of a Good Birdhouse](#) or, more specific to bluebirds, [NABS Nestbox Recommendations](#).

Where can you find a nestbox?

- You can make your own (plans attached):
 - North American Bluebird Society Mountain Bluebird Nestbox (door pivots at top)
 - The Carl Little Bluebird Box (door pivots at bottom)
- You can find some good options to purchase online. Some possible websites to check:
 - Etsy
 - Amazon
 - Craigslist
 - Bird and nature stores
 - Hardware stores

Monitoring your new nestbox:

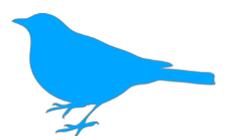
- If putting up nestboxes, it is important to check on the box once or twice a week. That way, you'll be aware of and be able to respond to any problems that arise throughout the season and help increase the chance of success for bluebirds or other native cavity nesters using the box. The best time to check nests is late-morning or afternoon during dry, mild weather.
- Keep an eye out for House Sparrows trying to use the box! These non-native birds are aggressive competitors for the limited cavity nest sites. Increasing House Sparrow populations adversely affect bluebird populations, so House Sparrows should not be allowed to nest in bluebird boxes. You can discourage this by continually removing House Sparrow nests once you become aware of them. (Read more about [House Sparrow control](#).)
- Become a citizen scientist! At this time, the Jackson Hole Wildlife Foundation is only able to monitor the bluebird trail nestboxes along the National Elk Refuge and in Dubois, but you can report your observations to The Cornell Lab of Ornithology's [NestWatch](#) program. Your observations could help increase understanding of Mountain Bluebirds!

Interested in helping the Jackson Hole Wildlife Foundation to monitor our Mountain Bluebird Nestbox Trail in the future? Check out the [project webpage](#) for more information!

Want to learn more?

Here are some additional resources:

- Predator control and identification
 - Sialis: [Predator/Problem Identification and Solutions](#)
 - Nestbox Builder: [Predator Control Devices](#)
 - North American Bluebird Society: [Predator Control Factsheet](#)
- Mountain Bluebird Identification and Natural History
 - NestWatch: [Mountain Bluebird](#)
 - The Cornell Lab of Ornithology: [All About Birds - Mountain Bluebird](#)
 - eBird: [Range Map](#)
- What's a MOBL? – American Ornithologists' Union [4-letter Bird Species Codes](#)
- General Bird Identification
 - Audubon: [How to Identify Birds](#)
 - Audubon: [ID Tips](#)
 - The Cornell Lab of Ornithology: [All About Birds](#)
 - The Cornell Lab of Ornithology: [Bird Academy](#) + [Inside Birding series](#)
 - Field Guides:
 - The Crossley ID Guide: Eastern Guide (There is no western guide available at this time)
 - Kaufman Field Guide to the Birds of North America
 - National Geographic Field Guide to the Birds of North America
 - Peterson Field Guide to the Birds of North America
 - The Sibley Guide to Birds
 - The Stokes Field Guide to Birds of North America
 - [What Bird Guide Is Best for You?](#)
 - [The Best Birding Apps and Field Guides](#)
- Recording your bird observations
 - [eBird](#)
 - [Why Should I eBird?](#)
 - [Do I have to be an expert to contribute to eBird?](#)
 - [Quick Start Guide](#)
 - [Bird Listing Software Review 2017](#)
- Learn more about [Nature Mapping Jackson Hole](#)



JHWF Mountain Bluebird Nestbox Monitoring Project

Project Objectives:

The program has three primary objectives:

1. Mitigate for lost habitat of cavity nesting birds in Jackson Hole.
2. Educate the public about the plight of cavity nesting birds.
3. Involve individuals in monitoring the boxes so they will become vested in sharing the message with others.

Nestbox Monitoring Goals:

The overall goal of the bluebird nest box monitoring program is to observe the use of the nest boxes without impacting nesting success. Monitors must take great care in not causing excessive disturbance to the nest while trying to obtain the following data:

- Nesting attempt number in each box
- Species using the box
- Report nesting by House sparrows or Starlings to coordinator
- Fate of the nesting attempt
- Apparent cause of failure
- Estimated first egg date
- Clutch size
- Estimated hatch date
- Hatch within 24 hours?
- Number of nestlings
- Fledge date
- Number of fledglings
- Number of unhatched eggs
- Blowfly evidence
- Comments & observations
- Need for maintenance

Nestbox Monitoring Protocols:

Monitoring usually begins near the beginning of May. Nestboxes should be monitored at least once a week, and as often as every 4-6 days after eggs are observed if possible. Please remember to refrain from opening the box after the hatched nestlings have reached 12 days. We don't want to encourage premature fledging. They will come out of the box soon thereafter on their own! All observations for each box should be recorded on the Nestbox Monitoring Daily Worksheet.

Monitors will need the following equipment in the field:

- Binoculars
- Clipboard
- Mountain Bluebird (MOBL) Nestbox Monitoring Daily Worksheets
- Pencils
- Phillips head screwdriver (always good to check the integrity of the box)
- Putty knife, cleaning brush and 10 to 1 water/bleach mixture for cleaning after final brood in late summer.



NABS Factsheet

Frequently Asked Questions (FAQs)

Q: I want to mount a bluebird box but don't know where to begin.



Barbara Baird

A: Bluebirds have quite specific nesting requirements, so it is important to understand that the key to attracting them is placing properly constructed nestboxes in suitable habitat. Bluebirds are insectivorous during the nesting season, feeding mainly on ground-dwelling insects. Ideal bluebird habitats are open and barren, or short-cut/sparsely grassed areas (so they can see their food) with a few trees nearby for perching. Pesticide- and herbicide-free pastures and meadows, cemeteries, abandoned orchards, hike-and-bike trails, prairie coulees, lightly traveled roadsides, abandoned railroad rights-of way, golf courses, open areas in parks, clearcut or recently burned areas adjacent to forests, and sagebrush flats all provide excellent bluebird habitat. Bluebirds will also nest on the fringes of towns and cities, especially if they were nesting in those areas prior to development.

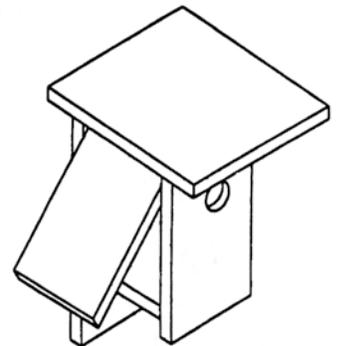
Poor bluebird habitat includes areas that they naturally shun (i.e., city centers, densely wooded areas, or intensively farmed areas where there is a lack of natural habitat), areas where they are in competition with House Wrens or House Sparrows, or locations where the boxes are at risk of predation or vandalism.

Q: How do I know if I have the right kind of nestbox for my bluebirds?

A: There is no one single perfect, ultimate bluebird nestbox. Dozens of different nestbox designs are being used with equal success by bluebird landlords throughout North America. Although styles and designs can vary, all nestboxes should provide the birds with a safe and secure nesting site.

The following are some tips for a good bluebird box; see our [Nestbox Recommendations](#) factsheet or web page for more information on nestbox dimensions (www.nabluebirdsociety.org/bluebirdfacts.htm):

- The best materials for bluebird box construction are ¾- to 1-inch wood or exterior grade plywood. Redwood often splits when it dries so it should be avoided in dry areas, and most pine boards will warp over time. Do not use treated lumber or interior grade wood (including OSB board). When possible, use scraps salvaged from construction sites, or where it is available, use environmentally sound, certified lumber from sustainably managed forests. Cardboard, plastic jugs, milk cartons, and large tin cans provide little insulation (especially against heat) so should not be used. Cardboard boxes and milk cartons are also easily accessed by predators.
- Bluebird boxes made from good quality wood do not need to be painted, but to help them last longer, some bluebird trail operators coat the outside of boxes with linseed oil, or stain or paint the outside of their boxes with a good quality exterior stain or latex paint. Use a neutral color in northern areas, and a light color in hot areas to reduce overheating. *Do not paint the inside of the box.*
- Assemble the box with screws or galvanized nails. Screws are more expensive but make construction easier and make it easier to replace or tighten parts.
- One panel (top, front, or side) **MUST** open to allow for monitoring and cleaning. Make sure the panel fits snugly to prevent rain from blowing in the seams.
- If plywood or smooth boards are used, etch shallow saw kerfs on the inside of the front panel, just below the entrance hole. Although young bluebirds are fairly adept at exiting most boxes, this roughness provides an extra toehold for them. If using hardware cloth, be sure the material is pressed tight against the wood so the birds won't get a toe caught.
- Perches encourage predators and undesirable House Sparrows. Do not build or purchase a nestbox with a perch.



Q: Where and how should I mount my nestbox?

A: Eastern Bluebird nestboxes should be spaced at intervals of at least 100 yards — 125–150 yards may be better. Mountain and Western Bluebird boxes should be 200–300 yards apart.

If House Wrens are likely to be a problem, be sure the box is mounted at least 50–200 feet away from a wooded or brushy area. If Tree Swallows or Violet-green Swallows are likely to use the box, try setting out two boxes about 5–15 feet apart so that the bluebirds can use one and the swallows the other. Most bluebirders have found that pairing the boxes will allow both species to nest side by side in relative peace.

Boxes should be mounted on a smooth metal pole at a height that is convenient for monitoring and maintenance. Bluebirds tolerate a box mounted as high as 15 feet and as low as 3 feet from the ground. However, a box mounted lower than 4 or 5 feet is at greater risk of predation.

The nestbox should be mounted so the entrance hole faces away from prevailing winds to reduce the amount of rain that might be blown into the box. The box opening should also face away from direct sun exposure. A nearby tree will provide young bluebirds with a place to fly to when they first leave the nest, and shelter from the elements and predators. Boxes mounted along roads should always face parallel with, rather than be perpendicular to, the road so that the birds (especially the fledglings) are more likely to fly along the road ditch, rather than out across the road and into the path of oncoming traffic. For more information, please see the NABS factsheet, [Getting Started with Bluebirds](#) (also online at www.nabluebirdsociety.org/bluebirdfacts.htm).

Q: OK, I've got my nestbox mounted. Now what?

A: Periodically monitoring your box on a regular basis is very important, as it will enable you to take the necessary steps should problems arise and to collect important scientific information (e.g., the number of eggs, nestlings, fledglings, etc). Because bluebirds and most other songbirds have a poorly developed sense of smell, they will not abandon their box if you open it.

Q: Everything seemed to be going fine with my bluebird family, but today I've only seen one bluebird parent at the box. What should I do?

A: As long as there is plenty of food, a lone parent can probably take care of the young. Since only the female has a brood patch (a bare patch of abdominal skin), she is solely responsible for incubating the eggs and keeping the young warm (called brooding) during their first week of life. If she is killed during these critical stages, the nest is doomed unless the nestlings can be cared for by a songbird rehabilitator. If the nestlings are older than about seven days, they are sufficiently feathered to stay warm at night, and the male can take care of them (as long as there is adequate food).

If you are certain that one parent is missing, check the nest to see what condition the nestlings are in. If they have succumbed, clean the box out. If they are still alive, contact someone with extensive experience with wildlife rehabilitation or bluebirds:

- To locate a nearby wildlife rehabilitation expert, go online to www.nwrawildlife.org or call your state wildlife agency or provincial Fish and Wildlife office.
- Call the NABS Hotline (see our website for contact information: www.nabluebirdsociety.org).
- Contact your area or regional NABS-affiliated bluebird group (see our website for a list by state or province: www.nabluebirdsociety.org/affiliates.asp).

Q: Something isn't right because I haven't seen either of the parents around for a while. What should I do?

A: It is quite possible that something has happened to the parents of your baby bluebirds. The first thing you must do is be 100% sure the nestlings have been abandoned. If possible, watch the box from a distance for one to two hours to see if they are being fed. If neither parent returns, check the box to see if the young are alive. If they are begging vigorously, they are hungry. If they are listless, they are weak and will likely perish if not warmed up and fed. Specialized training and a permit is required to raise wild birds. *Do not try to raise them yourself.* Instead, contact a wildlife rehabilitation expert as soon as possible. Not all of the nestlings will necessarily survive, but the sooner you get them to a licensed songbird



rehabilitator, the better their chances. See the question above for contact information.

In some cases, only the male bluebird returns. A female bluebird won't abandon her babies voluntarily, so if she disappears it means something happened to her. The male cannot incubate the eggs or keep the nestlings warm for the first few days after hatching, but he may raise the babies by himself if they are old enough to maintain their own body temperature. The male bluebird is very active in feeding and caring for the nestlings. Also, previous broods have been known to help a single parent to raise a brood.



Marion Ball

Q: I checked the nestbox and found broken eggs on the ground outside the box.

A: House Wrens, which are legally protected and ecologically valuable native birds, will enter a nestbox, poke small holes in the eggs and sometimes toss some or all of the eggs out onto the ground. House Sparrows, which are a non-native pest species, may also be responsible (see the next question for more information). Remove all the pecked eggs from the box, pick up all eggs and shells from the ground and dispose of them. If there are intact eggs still remaining in the box, the bluebird female—depending on the stage of incubation and her temperament—may return. Leave the nest for a day or two to see what happens. If it is abandoned, move the box to a more suitable location for bluebirds. House Wrens are less likely to use a box that is placed at least 50–200 feet away from wooded or brushy areas.

Q: I came out to check my babies, and found several of them dead and strewn out on the ground. Others were still in the box, but looked like they had been pecked on the head and eyes. HELP!

A: House Sparrows will enter a box and peck the occupants to death. Clean out the box and either take steps to either eliminate the House Sparrows or move the box to a more suitable location.

House Sparrows are often found around residential areas and farm buildings. To minimize competition from this aggressive predator and competitor, place your boxes where House Sparrows are not likely to be a problem. Please see our [House Sparrow Control](http://www.nabluebirdsociety.org/bluebirdfacts.htm) factsheet or web page for more House Sparrow management techniques (www.nabluebirdsociety.org/bluebirdfacts.htm).

Q: I have a bluebird that has been relentlessly pecking at or crashing into our windows for days! We can't get it to stop. Please help!

A: During nesting season, both male and female bluebirds are extremely territorial. Typically, the male aggressively defends the edges of the territory, while the female tends to defend the area around the nest site. When bluebirds display territorial behaviors at windows, they may be reacting to what they perceive to be a rival bird. While seldom resulting in death or injury, this behavior can increase stress levels (for both the birds and the house occupants!) and is a waste of energy. The behavior generally ceases once egg laying commences.

The only effective way to deal with this problem is to eliminate the reflection. Closing the curtains does not usually work, so other options include: covering the window on the outside with cloth, newspaper, or any other type of paper; hanging garden netting over the windows; rubbing the surface of the window with a bar of hand soap; placing a window screen over the window; tying several rows of string across the window (tie several thin pieces of colorful cloth or ribbon from the string); or hanging long, thin pieces of reflective Mylar over the window, allowing them to blow in the breeze.



Dreamstime.com/syromer



Note: It is important to remember that bluebirds and all other native birds that use nestboxes are wild birds that are protected under the Migratory Bird Treaty Act. It is not legal to touch or handle the eggs or young of bluebirds or any other native bird without a special permit. It is illegal to possess nests, eggs, or feathers of native birds without a special permit. State wildlife or natural resource offices or provincial Fish and Wildlife offices should be contacted for more information about permit requirements.

Please read a good book on bluebirds such as:

- STUDYING EASTERN BLUEBIRDS: A BIOLOGIST'S REPORT AND REFLECTIONS by T. David Pitts
- THE BLUEBIRD BOOK by Don and Lillian Stokes
- BLUEBIRD TRAILS by Dorene Scriven
- MOUNTAIN BLUEBIRD TRAIL MONITORING GUIDE by Myrna Pearson

All are available from our Bluebirder's Catalog. Also please consider joining one of North America's most successful conservation organizations and help NABS protect our bluebirds and other native cavity nesters.

Note: The above replies are of the opinions of the North American Bluebird Society. These replies should be used to help in your understanding of bluebirding issues. Further research is often needed, and frequently underwritten by NABS. NABS welcomes differing points of view which can be submitted in writing to: NABS, PO Box 7844, Bloomington, IN 47407 or via email at info@nabluebirdsociety.org

Revised May 2012

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

www.nabluebirdsociety.org



NABS Factsheet

Monitoring Bluebird Nestboxes

WHY MONITOR YOUR NESTBOX?

It is very important that bluebird nestboxes be actively monitored (checked) at least once a week. Bluebirds are tolerant of humans, and will not abandon a nestbox that is properly monitored. All bluebird boxes should be built so that they can be opened either from the side, front, or top.

A box that is not monitored may do more harm to bluebirds than good. Monitoring increases the chances of success for bluebirds using the box. When good records are kept, it is also valuable for determining population trends.

Monitoring nestboxes will alert you to problems birds may be having with predators and competitors. **House Sparrows** (sometimes called English Sparrows) and **European Starlings** are non-native species introduced from Europe. Their aggressive seizure of cavity nest sites is a primary reason for declines in bluebird populations. Starlings nest in many of the natural nest sites but can be excluded from nestboxes by using $1\frac{1}{2}$ or $1\frac{3}{16}$ inch entrance holes. House Sparrows are smaller, so they can readily enter bluebird nestboxes. They frequently kill adult and nestling bluebirds, destroy their eggs, or drive them from their nests. At no time should they be allowed to successfully nest in bluebird boxes. Doing so will increase the House Sparrow population and further reduce the number of bluebirds. See the NABS factsheet on [House Sparrow Control](#) (available on our website at www.nabluebirdsociety.org/bluebirdfacts.htm).



David Kinneer

A **paper wasp** or **mouse** nest will drive nesting birds away from the box, and should be removed. Take appropriate precautions to avoid breathing the dust from a mouse nest.

Knowing what species is using the box is also beneficial. Bluebird societies would like you to monitor and report all species using your nestboxes, not just bluebirds. Tree Swallows, titmice, chickadees, Carolina and House Wrens and nuthatches are all native, beneficial birds. Remember: It is illegal to remove an active nest of any *native* cavity-nesting bird. Keeping records on a weekly basis, and sending survey forms in at the end of the nesting season increases our knowledge of cavity-nesting birds.



Bet Zimmerman

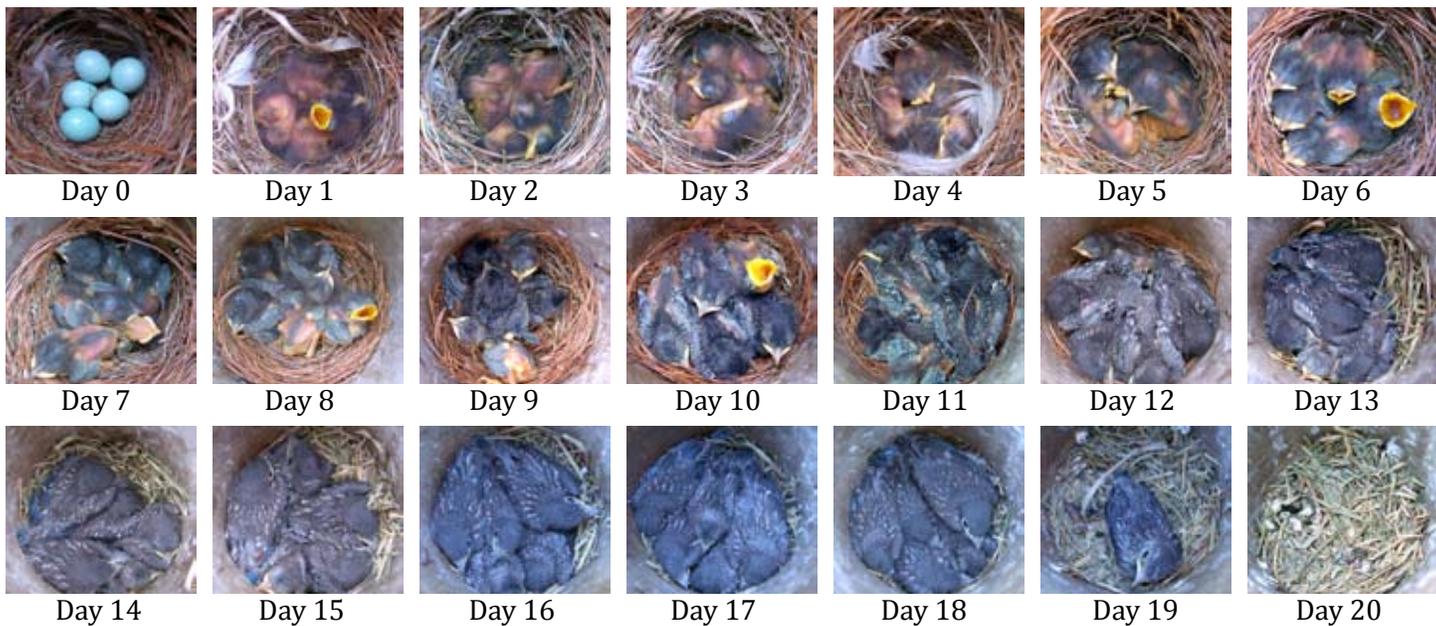
After any nesting effort has ended, either due to nest failure or successful fledging of the young, remove the used nest from the box. When a bluebird nest is successful, re-nesting in the same box may be encouraged if the first nest is removed. This can be done as soon as all chicks have left the nest. Females usually build a new nest.

WHAT TO MONITOR

When you monitor a box, determine which species is using it by examining nesting material and eggs. Record the date and the number of eggs or young observed. Knowing when the eggs were laid will help you determine if they are infertile, or when they should hatch and when the young would be expected to leave the nest. In the case of most cavity nesters, one egg is laid one each day until the entire clutch is complete. Incubation will then begin. For bluebirds, incubation typically lasts approximately 12–14 days. After hatching, the chicks will remain in the nest for about 17–21 days. Your monitoring should be limited to viewing from a distance after the 12–13th day, or the chicks might jump or fly from the box prematurely.



Eastern Bluebird Daily Growth



All photos courtesy of Bet Zimmerman

HOW TO MONITOR

Nest monitoring should only be done during calm, mild, and dry weather conditions to reduce the chance of chilling chicks or eggs. Open the nestbox carefully, and do not to allow the eggs to fall out or chicks to jump out. Songbirds have a poor sense of smell and will not abandon the nest due to monitoring the nest, eggs, or chicks. Even so, you should avoid touching eggs or nestlings.

Complete monitoring as quickly and quietly as possible to minimize disturbance. Avoid disposing of used nest material near the nest site as it may attract predators—instead put it in a paper or plastic bag and dispose of it in the trash far from the nestbox. Always be certain to close the box door securely before leaving. Record what you observed.

HOW TO IDENTIFY NESTS AND EGGS BY SPECIES

Bluebird: The 1–4 inch tall, relatively neat nest is built with fine grasses or pine needles with a fairly deep nest cup. Eggs (4–6) are powder blue or occasionally white. Mountain and Western Bluebird nests may contain bits of trash or feathers.



Bet Zimmerman



Bet Zimmerman



Marion Ball



Jim Williams

Eastern Bluebirds



George Gentry - USFWS

Western Bluebirds



Alan & Elaine Wilson

Mountain Bluebirds



Tree and Violet-green Swallow: Their nest is also made of grasses but they may use somewhat coarser fibers than a bluebird. It generally has a flatter cup than the bluebird's and is usually lined with many feathers. Eggs (5–7) are white, pointy on one end, and smaller than those of a bluebird.



Jim Williams



Bet Zimmerman



Marion Ball

Tree Swallows

House Wren: House Wrens fill a nestbox with sticks and then line the deep nest cup with fine plant fibers or feathers. “Dummy nests” without the nest cup are often built in other cavities within the male House Wren’s territory to reduce competition for resources. The tiny eggs (6–8) are glossy white/tan, heavily speckled with pinkish-brown spots.



David-Mitchell



Bet Zimmerman



Marion Ball

Chickadee: Chickadees build a nest of moss and plant down, with a small, deep nest cup lined with hair, fur or plant down. They lay 5–8 white or cream non-glossy, tiny eggs that are covered with reddish-brown speckles. Eggs are often covered with a plug of hair or fur when the female leaves the box.



Marion Ball



Marion Ball



Marion Ball

House Sparrow: House Sparrows build a tall, sloppy nest of coarse grasses (usually with seed heads), often with feathers and pieces of scrap paper, cloth, cellophane, or other garbage. The nest in a large box or in the open forms a canopy with a tunnel-like entrance. The 5–7 cream- or greenish-colored, non-glossy eggs have heavy brown markings.



Adam Kumsisza

J.M. Garg



Bet Zimmerman



Bet Zimmerman

Tufted Titmouse: The nest of moss, fur, and soft plant fibers is similar to that of chickadees; may be made primarily of crumpled dried leaves with grass, also bits of snakeskin, cellophane, and bark strips. The cup may be padded with hair, fur, bits of string, or cloth. The eggs are similar to the House Wren's but larger and less heavily marked.



Ken Thomas



Bet Zimmerman



Bet Zimmerman

Some Common Cavity-Nester Eggs

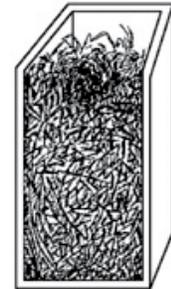


Bet Zimmerman

Cutaway Views of Nestboxes



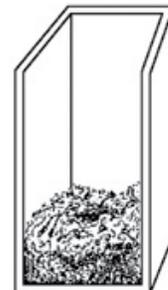
Eastern Bluebird nest



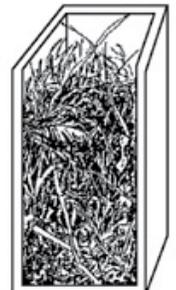
House Wren nest



Tree Swallow nest



Carolina Chickadee nest



House Sparrow nest

Other nests sometimes found in bluebird nestboxes (depending on the area) include those of Ash-throated Flycatchers, Bewick's Wrens, Carolina Wrens, Eurasian Tree Sparrows, Great Crested Flycatchers, House Finches, nuthatches, titmice, and Prothonotary Warblers.

Revised May 2012

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www.nabluebirdsociety.org



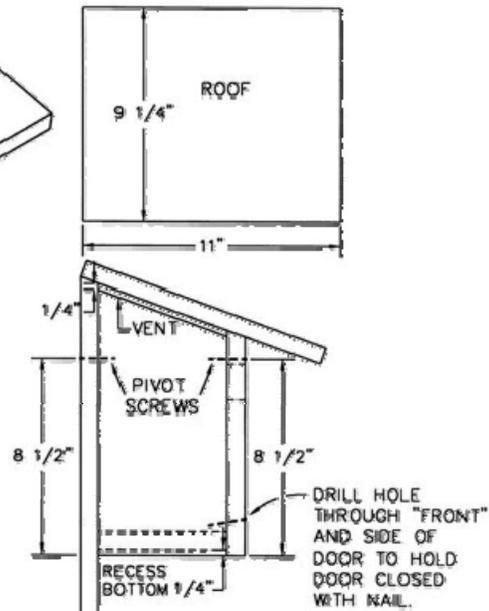
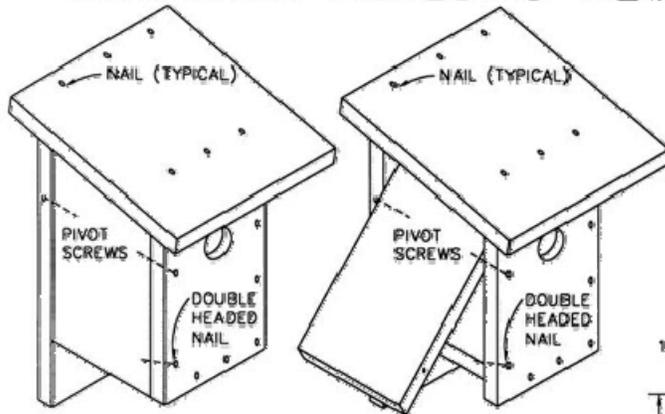


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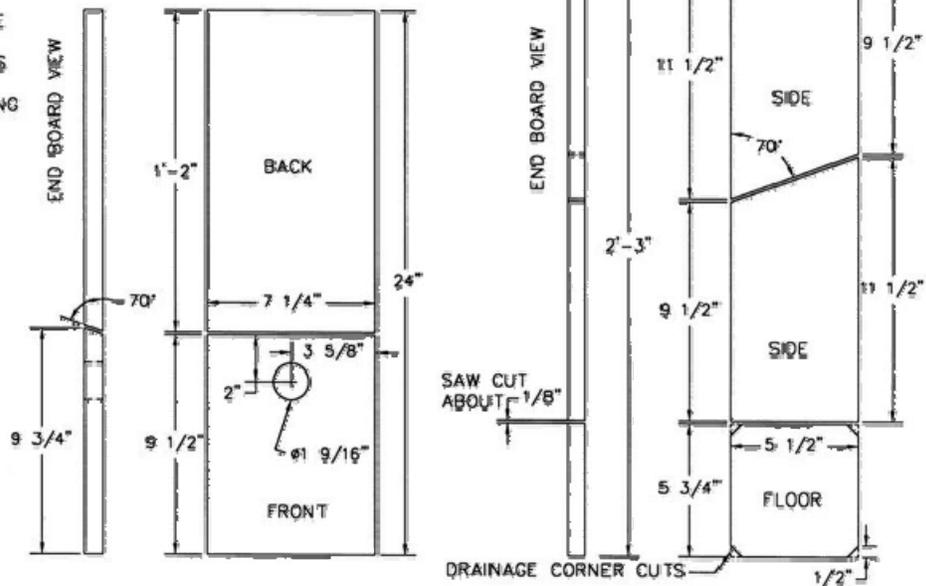
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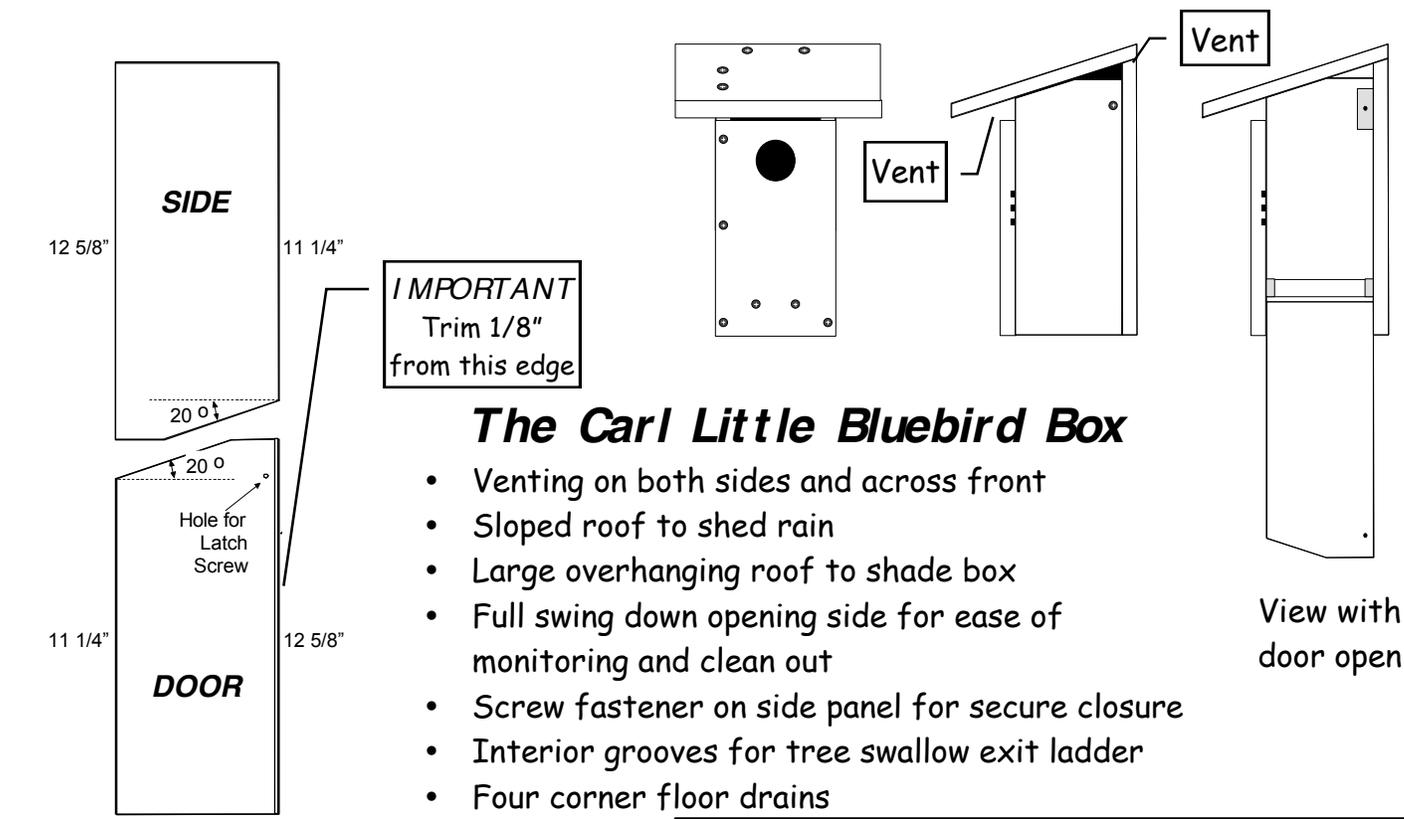
MOUNTAIN BLUEBIRD NEST BOX (Western Bluebird also where ranges overlap.)



- MATERIALS LIST**
- STANDARD 1" X 6" NOMINAL - 27" LONG (ACTUAL SIZE 3/4" X 5 1/2")
 - STANDARD BOARD 1" X 8" NOMINAL - 24" LONG (ACTUAL SIZE 3/4" X 7 1/4")
 - STANDARD BOARD 1" X 10" NOMINAL - 11" LONG (ACTUAL SIZE 3/4" X 9 1/4")
 - HOLE CUTTER 1 9/16" DIAMETER
 - 1 3/4" GALVANIZED NAILS - APPROX. 20
 - 1 3/4" GALVANIZED SCREW FOR PIVOT POINT - 2
 - DOUBLE HEADED NAIL FOR HOLDING DOOR CLOSED - 1

BELOW ENTRANCE ON BOTH SIDES MAKE SCRATCHES INTO WOOD WITH NAIL FOR CLIMBING TRACTION.



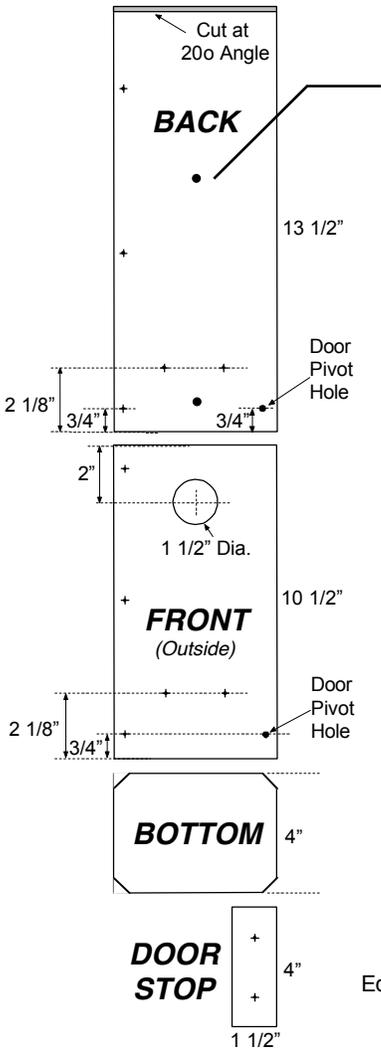


IMPORTANT
Trim 1/8"
from this edge

The Carl Little Bluebird Box

- Venting on both sides and across front
- Sloped roof to shed rain
- Large overhanging roof to shade box
- Full swing down opening side for ease of monitoring and clean out
- Screw fastener on side panel for secure closure
- Interior grooves for tree swallow exit ladder
- Four corner floor drains

View with door open



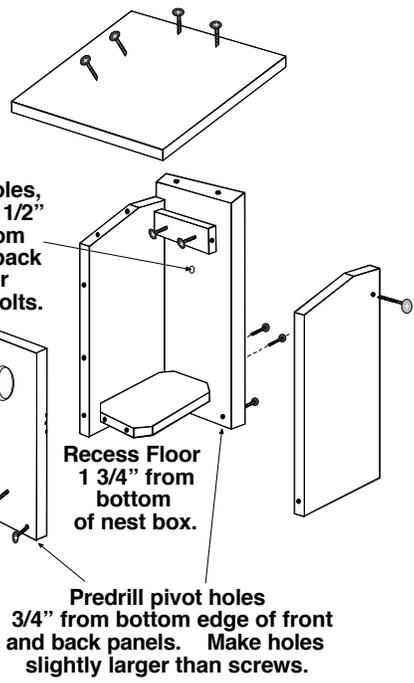
Drill 1/4" holes centered 8 1/2" and 1" from bottom of back panel for mounting bolts.

Exterior Painting
The exterior of the nest box may be painted with water-based light colored paint or sealant to extend the life of the box.

Swallow Ladder

Materials

- 5' - Standard Nominal 1"x 6" Board
- 1' - Standard Nominal 1"x 10" Board (or 2" x 10" Board for a better insulated roof and less warping)
- 19 - Galvanized Deck Screws #8 x 1 3/8"



Edge View of Roof

