Bluebird Restoration Association of Wisconsin

Information Packet:
Attracting Eastern Bluebirds & other cavity nesters

5th Edition

Edited by Patrick Ready (BRAW Editor)

Life cycle of the Eastern Bluebird (Sialia sialis) by Patrick Ready.

Pair select box and female builds the nest.

Within a week or two 3-5 eggs are usually laid in the nest.

After13-14 days of incubation the chicks hatch.

The male stands guard.

The chicks grow quickly being fed by both parents.

After 16-22 days old the chicks are ready to fledge.

Bluebird Restoration Association of Wisconsin, Inc. has come a long way since its inception in 1986 with its understanding about how to effectively manage Eastern Bluebirds. This booklet pulls together the collective experiences of people who work especially for the interests of bluebirds, particularly those persons who record and summarize their nest box data and whom we term "monitors." BRAW's handling and interpretation of monitor data is done through data entry and computer analysis.

BRAW is the first to admit that not all experiences with bluebirds is typical of them throughout the state. However, most of our knowledge appears to be true regardless of where we encounter them. But bluebird management can be restricted by climate, geography, and habitat. The presence or absence of one or more natural enemies of bluebirds can alter results or even be a disaster. Nest box design, how a nest box is mounted on a post, and the spacing of boxes can profoundly affect what happens on a bluebird trail.

It is our hope that this **Informational Packet** produced by the Bluebird Restoration Association of Wisconsin, Inc. will bring you better understanding about how to succeed in helping this bird "with the sky on its back."

The Bluebird Restoration Association of Wisconsin, Inc. (BRAW) is a nonprofit organization incorporated under the Laws of the State of Wisconsin. The **purpose and mission** of BRAW is to increase the production of the Eastern Bluebird and other native cavity-nesting song birds through a coordinated, statewide nest box construction and monitoring program. BRAW seeks to expand public knowledge and enthusiasm for the Eastern Bluebird so that a growing number of people will have the desire to aid cavity nesters and have the knowledge about how to best accomplish this in their own communities.
BRAW coordinates its cavity-nesting recovery program through a network of volunteer **County Coordinators**, workshops, meetings, and its official **Wisconsin Bluebird** newsletter and our website: www.braw.org.

When BRAW was organized in 1986, it was estimated that the Eastern Bluebird population ***in its historic range*** had declined by 90 percent during the preceding 50 years due to changes in agriculture practices, competition from the House (English) Sparrow and European Starling, severe weather in its central and southern winter ranges, and the loss of nest sites, such as tree cavities and hollow wooden fence posts.

A few far-sighted individuals and local organizations that took note of the plight of bluebirds in their respective communities had helped bluebirds and other cavity nesters during those bleak years. Much experimentation was done to develop nest boxes. Some of those efforts were more successful than others. Bluebird "trails" consisting of a few or many bluebird nest boxes were established by some persons. Special care of nest boxes (monitoring) was begun by more knowledgeable bluebirders. A few individuals kept records by documenting bluebird nesting success and events on their trails.

BRAW works to bring to light the efforts of Wisconsin citizens who had been helping bluebirds in the past and those who have recently joined their ranks. Since 1996, BRAW has entered monitors' data into a computer database and as a result, through computer analysis of the data, we are gaining better insights; and nest box designs affect bluebird population dynamics.

Through workshops, the Annual State Convention, and publication of research findings in the **Wisconsin Bluebird** newsletter, BRAW shares successful production techniques while hopefully avoiding some of the mistakes painfully learned by earlier bluebird enthusiasts.

County Coordinators are the "grassroots" of Wisconsin's Eastern Bluebird restoration program. County Coordinators often conduct local workshops each year that are usually held in late winter and early spring. BRAW's County Coordinators distribute literature, are sources for nest box construction plans, answer questions, and otherwise serve as knowledgeable persons to help individuals, clubs, and organizations effectively aid bluebirds and other cavity nesting birds. The County Coordinators assist interested persons in becoming members of BRAW.

BRAW members provide the financial base for the publication of the quarterly newsletter, **Wisconsin Bluebird.** The newsletter reports monitors' data, data interpretations, various readers' experiences, and cavity nesters. In addition the newsletter covers how to recognize good habitat, why and how to monitor a bluebird trail, spotting bluebirds' natural enemies, defending bluebirds against them, and identifying nest failures and solutions. Read about the impact and significance of other bird species that may nest in bluebird nest boxes, the names and addresses of County Coordinators and BRAW, Inc. officers and directors.

BRAW, Inc. maintains liaisons with the Department of Natural Resources' Bureau of Endangered Resources, the UW-Stevens Point, the North American Bluebird Society (NABS) and the Wisconsin Society for Ornithology.

We invite you to join us and be a part of the bluebird conservation movement in Wisconsin.

Visit our web site at: www.braw.org

GUIDELINES FOR SUCCESSFUL MONITORING OF EASTERN BLUEBIRD NEST BOXES

Pat Ready

This monitoring guide is dedicated to the hundreds of nest box monitors that have collected data for BRAW for over 30 years. It is because of their careful collection of data and responsible reporting that it has been made possible.

The Bluebird Restoration Association of Wisconsin has been around for over 30 years. Many ideas have come and gone over that time period. Some were bad and forgotten. Some were tried and true. This resource guide contains the best information we know of that will help you attract Eastern Bluebirds wether you have a single box in your yard or have several boxes comprising a bluebird trail.

Many factors affect the success of your desire to get bluebirds and have them return year after year. One of them is the weather. It is obvious that we will never control the weather. But it is not only the weather in Wisconsin that influences bluebird reproduction in the state. Severe weather down south where many of our resident bluebirds spend winter can take a toll on their population. In particular ice storms can cover their food sources for several days causing many birds to starve.

No other cavity nesting songbird is subject to this reproductive influence by the weather. Black-capped Chickadees do not migrate much and both Tree Swallows and House Wrens migrate far enough south that weather does not influence their overwintering populations much. Moreover, Tree Swallows (3-4 weeks later) and House Wrens (5-6 weeks later) do not start nesting until much later in the season and are not as subject to harsh weather effects on reproduction as are bluebirds.

In spite of the good news about bluebird populations in Wisconsin and the U.S., this species continues to be vulnerable to weather and competition from other cavity nesting species. A continuation of conservation efforts is not only desirable, it is essential if we are going to produce healthy numbers of this charismatic species.

Common Myths Associated With Bluebird Monitoring.

There are several myths that monitors must dispel in order to reach a high productive output for their boxes:

1) Moderate disturbances will cause bluebirds (and other cavity nesting songbirds) to abandon their nests.

This is so untrue. This myth, very common in the general public, has been used forever by parents and others to keep children from vandalizing nests. It may serve a good function from that standpoint, but beyond that goal, the idea is worthless.

It should first be noted that perching birds (= passerines) can smell but, "residual human scent on eggs and nest does not deter the parental instincts of passerines (Gill 2007)". Their sensory existence is mainly limited to sight and hearing. When one opens a nest box, therefore, and handles the eggs or young, or the adults themselves, the birds are not noticeably influenced by smells from the monitor.

In fact, bird banders have captured both adults and young in nests for decades, taken them out to band them, held them firmly to affix the band and then released (adults) or replaced juveniles in the nests—all with only rare mishaps. And bluebird monitors don't come close to traumatizing juveniles & adults in this way.

2) When you place a nest box, you are placing it in a permanent position, never to move it again.

Nothing could be further from the truth. No nest box on any bluebird trail should be considered permanent unless it is attracting bluebirds! To do otherwise is to focus on your ego that is saying: *"this place will be absolutely ideal for bluebirds"*. Well, I am sorry if bluebirds don't build in your house, but they are saying, *"sorry, monitor, I don't like where you placed the box—I can't raise young in these conditions"*. Don't you owe it to them to put it in a place where they can nest successfully?

By moving any boxes that have had no bluebird nests in them by the end of April the 2nd season the boxes are in place, you have essentially given them two seasons to attract bluebirds, but can then place them in a new position that still has a 50:50 chance to attract a pair for the remainder of the 2nd season. Of course, if another songbird has already occupied your nest box by the end of April in the 2nd year, the songbird should be left to complete its reproductive cycle

3) Noise will prevent successful nesting in bluebirds.

To me, it was surprising to find that bluebirds tolerate high levels of noise. The first insight I got about this fact was placement of a nest box in a park along a heavily traveled street on the west edge of Plover, WI. This box has been in place for ten years and has successfully produced broods all ten years and successful double broods in most of those years.

What was most important was the habitat I selected. It consisted of a highway with a swath of vegetation of about 50' kept cut low (made it ideal for ease of insect observation), 20-30' high electrical wires overhead for perch hunting, short trees in front of the boxes for adults to perch on prior to entering the box with food and for

young to fly to when they fledged, and railroad tracks with short grass hunting sites on both sides of the track. In spite of the noise levels, an excellent and productive habitat for bluebirds.

4) One should not put boxes next to roadways for fear of bluebirds being killed by passing cars.

Moderately traveled roads (with good bluebird habitat) provide a great opportunity to raise successful broods and are safe for monitoring. Heavily traveled roads can be outstanding for raising bluebirds but hazardous to stop along.

5) One has to monitor nest boxes only once every two weeks or a month.

When one assumes the responsibility for monitoring a nest box, you assume the responsibility to do what you can, to see that the natural cycle of the songbird is completed without interference from humans or other predators. Monitoring once per week assures: 1) accurate collection of data 2) nests and/or eggs will be removed from inactive boxes 3) removal of wet nests or wet nests with eggs or chicks can be replaced with dry nests 4) dying chicks can be removed and fostered into nests with healthy young 5) finding and controlling acute problems such as black fly infestations 6) fixing nest boxes, posts or guards that might have been damaged and that are threatening the safety of the songbirds in question and 7) locating and/or reporting any vandalism to your boxes.

Natural History Information for Cavity Nesting Songbirds

Bluebirds face competition from other cavity nesting songbirds such as House Sparrows, Tree Swallows, Black-capped Chickadees and House Wrens.

In late March & early April, only sparrows and chickadees compete with bluebirds for nest boxes, as all start nesting about the same time (sparrows nest before bluebirds, bluebirds nest before chickadees). If one places nest boxes 100+ feet in the open, away from wooded edges, occupancy by chickadees is normally not a problem. Likewise, if you place your nest boxes some distance away from cattle and other livestock (200+ yards) or do not

Shari Kastner

place your boxes in suburban neighborhoods, occupancy by sparrows is minimal.

Bluebirds have a "wing up" on Tree Swallows in that they will start building nests 3-4 weeks before they do. As our winters have shortened due to global warming, swallows are narrowing that gap because they are migrating back from the Gulf Coast earlier.

You can prevent competition from House Wrens. First of all, if one places a nest box 100'+ away from short & dense, brushy vegetation, wrens usually do not build in those boxes and if they do so, build dummy nests. Secondly, wrens migrate back to WI even later than swallows. Since they do not even start nesting until mid-May, nearly 100% of nest-seeking bluebirds have selected boxes by then. Wrens are almost never a competitor in the 1st nesting cycle for bluebirds, but can become a major competitor in the 2nd or 3rd nesting cycles. It's best to avoid putting boxes near dense trees or shrubs where wrens like to hang out.

What kind of nest box should I use for a bluebird trail?

Bluebirds will nest in almost any box type if it's placed in the right habitat for them. In their natural environment, bluebirds largely occupy abandoned woodpecker holes. Therefore, boxes that simulate these holes work best. Shallow nest boxes with floors that are only 4-5" below the bottom of the oval hole and with an interior platform of 4"x 4" or 4"x5", fledge the most bluebirds. BRAW has found three designs it prefers for attracting bluebirds and getting the best production of fledglings. The NABS-Style box, The Simple Box and the Peterson box are all good designs that BRAW reccommends. (See box plans in the back of this guide.)

Monitoring Instructions.

1) Terminolology

Sprigs: Pieces of grass put into a box by a male to entice a female to the box
Partial Nest: Any nest construction with grasses placed in a circle or covering the nest platform until a cup is formed in the nest
Complete Nest: Any nest with a deep cup
Complete Nest, Ready for Eggs: A deep cup with grasses tightly packed by the body of the female
Clutch: Total eggs in nest
Brood: Group of young birds in the nest
Broody: Word to explain why a female does not want to leave the clutch when the box is opened
Double Brood Box: Boxes that have fledged two broods
Triple Brood Box: Boxes that have fledged three broods
Fledged or Fledgeout: The process of young permanently leaving the nest
Fledglings: Young that have permanently flown from the nest.
Juveniles: Young that are living outside the nest; first stage of adulthood
Juvenile Assisted Feeding: Juveniles from the first brood who are assisting in feeding the 2nd or 3rd broods or the juveniles from the 2nd brood who are assisting feeding in the 3rd brood.
Nest Box Year: A nest box that has been monitored for one season
Nestling (= hatchling, chick or young): Individual birds in the nest
EABL: Eastern Bluebird
TRES: Tree Swallow
HOWR: House Wren
BCCH: Black-capped Chickadee
HOSP: House Sparrow

2) Forms to use.

Use individual sheets for each nest box (BRAW Form 22 - download at www.braw.org). When you use Form 22, you are expected to determine

the age of the young in the nest box to assure that you take caution as they age, in order to keep them from jumping out of the nest box (see photographic chick aging sequence of Dr. Jack Bartholomai on back cover). If you monitor the nest boxes once every 6-8 days (1 week average), it is usually pretty easy to determine the age of the young, accurate to within a day.

At the end of the season use the information you gathered and report it to BRAW for their Annual Data Report printed in the *Wisconsin Bluebird* newsletter. Use the BRAW EZ Summary Form (Pg. 9) and mail it or email it to BRAW following the instructions on the form. **You can also go to www.braw.org and enter your data online and you will receive an email confirming we received it.**

3) Approaching & opening the nest box.

Monitor boxes once/week. Experience has shown that production of bluebirds improves if you visit one or more times/week. For example, if there is an extreme weather event and a nest gets wet, the eggs/birds can survive for only a few days. If you monitor the boxes only once every two weeks, you assure that the eggs/young will die under these circumstances. By visiting every week, you could build a dry nest and save the eggs/young (see below). Also, weekly monitoring helps you determine if the nest is active or not. Destroying inactive nests increases productivity.

As you approach the nest box, make a loud pishing or clapping noise from 10-20' away. Pishing is commonly used by birdwatchers and involves making a shhhhhh sound with an explosive "p" sound preceding it (one continuous sound). If the hen does not flush from the nest, go to the back of the box and make loud tapping noises on it.

By using these techniques, you should be able to get an accurate count of eggs and young, important data for BRAW.

4) Counting eggs & nestlings.

After you have flushed the hen from the nest, you are then ready to count the eggs and/or nestlings.

Counting eggs:

A complete clutch (= total) is 4-5 light blue eggs. In unusual cases, probably associated with exceptionally good habitat & feeding conditions, 6 eggs are laid.

When you look into the "hen-less" nest, pull back the cup edge and you will be able to see the eggs.

If it is a Tree Swallow nest, you must part the feathers to find the eggs. The eggs of chickadees are covered when the hen leaves the nest during egg laying, so carefully pull back the hair covering them to get a count. In some cases, it is best to "touch-count" the eggs. This technique allows you to count the eggs with minimal disturbance. Rarely, you will find a larger, brown-mottled egg in the nest that is likely to be that of a Brown-headed Cowbird. This bird is protected and the egg should be left in the nest to complete its natural cycle.

To help prevent this parasitism, reduce the size of your box opening.

Incubation takes 13-14 days in bluebirds (Erhlich et al. 1988). The hen may delay initiation of incubation until the weather warms.

Counting nestlings:

Healthy nestlings that are hungry will naturally "gape" when you open the nest box. If they are sleepy or recently fed, they usually can be enticed to gape by making a light pishing, kissing or whistling sound.

Tom Koch

Rearing chicks takes 15-21 days, depending on the time of year (spring is longer, summer shorter; Berger et al. 2001).

5) After the young have fledged, what do I do with the old nest?

Remove the nests from the boxes after the young have fledged. Scrape off all feces on the sides of the boxes, you do not have to wash out the inside of the box. For those that are com-

Reproductive landmarks of songbirds & House Sparrows In the Central Wisconsin area (2005 Data*)

Bird Species	Arrival Date	1st nest Built	1st egg Laid	1st Hatch	1st Fledge	Last Fledge	Length of Reproduction
EABL	24 Mar	1 Apr	10 Apr	30 Apr	20 May	10 Sept	163 days
BCCH	Resident	7 Apr	18 Apr	5 May	25 May	25 July	110 days
TRES	29 Mar	1 May	12 May	8 June	28 June	21 July	82 days
HOWR	20 Apr	15 May	23 May	20 June	20 July	2 Sept	107 days
HOSP	Resident	1 Apr	10 Apr	DNA	DNA	DNA	# 163 days

*In some cases, the actual dates may be off by a few days

Estimated only

pelled to more thoroughly clean out the box, however, use only water and a towel (no soap; windex spray bottles work well).

Remove the old nest from the area, place it in a plastic sack and dispose of it in the trash at home. While insects such as blow flies are rarely a problem for songbirds in our experience, there is only one reason to leave the nest in place, that of leaving the jewel wasp, a parasite on blowflies, in place to parasitize blowflies in the next nest (Berger et al. 2001). Since it has been our experience that blowflies are not injurious to bluebird nestlings and that old nests block nesting attempts by other bluebirds, we still recommend removing the old nests except in the situation that follows: The longer one has a trail in place, the more common are second (and third) nestings. This means that new nests will sometimes be started prior to removing the old nest. In that case, the new nest can be built so high that it makes the bluebirds more vulnerable to predation because they are so close to the opening. If the nest is sturdy enough, it is possible to lift it off of the old nest and remove the old nest from under it. In other instances, it is so flimsy that it is best to leave the old nest underneath the new one. It is not worth the risk of disturbing nest building and the abandonment of the box by the hen.

6) What should I do if nests remain incomplete, empty, or with unhatched eggs?

All songbirds are protected by the Migratory Bird Treaty Act of 1918. The Act states: "unless and except as permitted by regulations…it shall be unlawful at any time, by any means or in any manner to pursue, hunt, take, capture, kill…possess, offer for sale, sell, purchase, ship, export, import…, transport or cause to be transported…any migratory bird, any part, nest, or eggs of any such bird...included in the terms of conventions between the United States and (Canada)…the United Mexican States…and the… Government of Japan".
BRAW absolutely supports this law. It is therefore illegal to destroy any nest, eggs or young of any songbird except in the following situations approved by Ms. Andrea Kirk, Permits Chief, Migratory Birds, USFWS Region 3, Ft. Snelling, MN 55111 on Dec. 27, 2006. Ms. Kirk has determined that nests and/or eggs of any songbird are inactive in the following situations and can therefore be destroyed. For specific removal criteria, see **Nest, Egg and Chick Removal**, on Pg. 12.

It is our experience that when empty, partial or complete nests, or nests with unhatched eggs are left in the box, it "blocks" nesting attempts from individual hens that started the nest

Rick Pertile

or from new hens. Although we do not know which "type of bluebird" is being blocked, our data indicate that removal of the nests using the procedure listed above, leads to a new nest being built and/or clutch of eggs laid by a bluebird, within one or two weeks in most boxes, when this procedure is followed in the months of April through June. Leaving the nests or eggs in place delays further nest attempts by up to 6 weeks.

On December 2, 2006, the BRAW Board voted 12 to 0 to establish the following policy: *"No bluebird monitor's data will be accepted for seasonal reporting if they are known to destroy active songbird nests".*
Monitors are expected to follow the criteria for inactive nests approved by the USFWS on Dec. 27, 2006.

7) Problems encountered while monitoring boxes

a) Nest boxes occupied by other bird species.

Swallows, wrens & chickadees are "good guys", i.e., songbirds. They should be treated with respect as described above. The best technique to keep song birds other than bluebirds out of your boxes is to put them in habitat preferred by bluebirds, not other species.

Swallows prefer habitat with water over the drier, upland habitat preferred by bluebirds. Keeping boxes away from water (including marshland) will increase the chances of attracting bluebirds to them.

Wrens love short & dense, brushy vegetation with shading. Keep boxes 100′ away from such vegetation and usually only a dummy nest is built. It is best to move the box another 50-100′ away from the dense vegetation if nesting is attempted.

Chickadees are the least likely to occupy a bluebird house. They prefer edges of conifer woods and shaded nesting habitat. Keeping boxes 100+ feet away from such habitats will usually eliminate their nest attempts. Sometimes they will occupy a box in the open, far away from woods.

Most monitors struggle with House Sparrow problems. We have tried a variety of techniques to keep sparrows out of boxes but nothing worked long term. Our approaches included using PVC and K-Box models—they failed. We have tried sparrow "spooks" of tinsel & pin-wheels, plastic covers over entrance holes and fishing line hung from the roof in front of the box openings. They failed. We have tried waiting until the hens lay eggs, removing the nests and crushing the eggs on the platform. That failed.

The best approach for sparrows is to stay away from properties heavily infested with them (cattle farms and homes which feed millet and cracked corn). If that fails, use Van Ert traps to

remove sparrows (details on Pg. 12).

b) Wet nests.

Rarely do nests get wet in boxes. If they do, the most common reason is a "leaky box". The first consideration, therefore, is to repair the box by replacing boards, tightening them or caulking leaks. Sometimes, under extraordinary conditions, winds will blow so strongly, that an otherwise "water-tight"box will "take on water" and produce a wet nest.

Songbird hens, including the bluebird, incubate their eggs at about 97F. A wet nest quickly drops the egg temperature below this level, causing arrested development. Wet nests also cause abandonment of nests prior to egg laying. If there are young in the nest, especially less than a week old, they will quickly die of hypothermia from a wet nest, especially in cold weather.

The bottom line is, replace all wet nests with dry material. It is best to begin the season with a small sack of dried vegetation, good enough for making up to 6 nests.

All too often, when you experience finding a wet nest, all other vegetation around the box is wet. "Plan ahead" is a good policy when it comes to wet nests. Once the hen completes a nest, she will tolerate any kind of cup-shaped vegetation that might be available to make a "humanly-constructed" nest.

Preferred materials, however, include white-pine needles and any dead but soft, short-leaved grasses.

Leif Marking

d) Critters invading the box.

i. Blackflies.

See treatment approachs on Pg. 12.

ii. Blowflies.

Blowfly larvae are gray-brown and about ½" long and are usually not very active when you find them in the nests. It is true that blowflies are ectoparasites on nestlings, attaching to the abdomens for nourishment. Typically, these "feedings" occur at night and the larvae return to the safety of the nest during the day.

Use Permethrin-10 spray on nests prior to egg laying or by using a glass cover after eggs are laid (see Pg. 13). Some researchers have suggested that the survival of House Sparrow chicks was reduced after blowfly parasitism. If that is the case, bluebird and other cavity nesting bluebird chicks might be surviving but weakened by blowflies and have a higher mortality after fledging. Treatment of nests with Permethrin-10 should kill the blowflies and prevent any deleterious effects due to these ectoparasites.

iii. Ants.

Ants are rarely a problem in nest boxes, although they have been known to attack, kill, and devour newly hatched nestlings on occasion. They may even attack and kill the young birds by entering the eggs as soon as the shells are cracked in the hatching process. (Zeleny 1976).

iv. Mites

BRAW monitors have recorded no known fatalities from mites. In fact, it is rare that they occur in numbers large

c) .

enough to be detectable by humans. But sometimes, they overrun a nest and must be dealt with when removing the old nest. It is best to use gloves as they are "creepy crawlers" of the worst kind. They do not harm humans (and apparently the birds in the box), but they are uncomfortable if they get on your skin. Just rub them off and try to "dust out" the box as best you can so the next brood will not start with a bad mite infestation. It is our experience that mites are more common in Tree Swallows than other songbirds.

v. Wasps

Rarely, wasps attach inside the nest box but more commonly they attach underneath it. It is always possible to get stung by them, so caution should be used when removing the nest. To prevent their further attachment to the same site, spread vasoline or bar soap over the place the nest stalk attached to the box. Peterson nest boxes are particularly prone to wasp infestation under the floor.

e) Climatic Effects.

In northern latitudes, cold has proven to be the most limiting factor during the reproductive season, much more so than heat (as reported by bluebird monitors across the state).

The most sophisticated temperature studies done by BRAW members are those by Marking, Craig & Koperski (2006, 2008) and other members of the Brice Prairie Conservation Association (BPCA). In two studies on temperatures in nest boxes, they made these important observations: 1) east facing nest boxes showed increased temperatures as they were hit by the morning sun (this temperature spike supposedly explains in part why bluebird production in northern latitudes increases when boxes are placed in Northeast, East or Southeast-facing directions [Dhondt & Phillips]) 2) Non-vented boxes are warmer in spring and cooler in summer than vented boxes. Eliminating vented nest boxes during springtime has led to improved bluebird production by BPCA and 3) painting nest boxes dark colors increases heat stress in bluebird chicks in the months of July and August and should be avoided. Painting is not necessary, but if it must be done, light colors should be used.

Jack Bartholmai

The Well-Equipped Monitor.

The following suggestions are only guidelines and include materials for repairing nest boxes, something that you might have to confront. It all starts with a container of some kind. You can use a small bucket, or use a knap-sack, a fanny pack or fishing tackle box.

Below is a list of items that can be useful when you monitor nest boxes:

1) FRIENDS designed form & pencil

2) Clipboard or notebook for data forms (I prefer a three-ring binder)

3) Flat paint scraper to remove old nests; plastic sack for old nests

4) Brush to clean out nest box

5) Pilers & screwdriver. automotive mirror to peer into nests

6) Hammer & caulking for repairs

7) Cell phone to photograph completed form and mail to Gisela

8) Non-toxix solution in an aspirator bottle for controlling, blowflies, ants & black flies (when present) and/or ant & roach powder.

So Why Else Should We Monitor Bluebird Boxes?

Few persons in the world have the chance to experience the wonder and mystery of the reproductive development of a wild creature. But nest box monitors do. This is a sacred experience that should be shared with as many people as possible.

It is likely that in this modern age of technological marvels, fewer and fewer children have the chance to "experience nature". Take adults & especially children with you on your monitoring trips. Explain to them the wonders that you see each time you go out on your trail.

Good luck finding, raising and fledging "the blues" and other cavity nesting songbirds.

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Dr. Kent Hall of Stevens Point was instrumental in providing much of the contents of this guide. He is a former Vice-President of BRAW.

Nest Guide to Cavity Nesters

by Patrick Ready/BRAW

Eastern Bluebird

Fine or coarse grasses, pine needles, lined with fine grasses.

Tree Swallow

Similar to bluebirds, coarser grasses & straw, lined with feathers when eggs are laid.

Black-capped Chickadee

Moss, fine grass, lined with animal hair.

House Wren

Sticks and twigs jammed in tight. Lined with a small amount of fine grass and hair. Often builds dummy nest with a few sticks but without lined cup.

House Sparrow

grass, straw, feathers, paper, plastic, etc. and they usually swirl the grass upward to fill the box, then tunnel down in. Sometimes when a nest is first started it my be hard to tell what species is nesting. Wait a day or two to see how the nest develops. Feathers and wrappers early on with some grass pieces are definite signs of House Sparrows.

Above: Peterson box filled with straw, grass, and garbage indicate a House Sparrow nest.

Middle: Eggs-white or grey with brown specs

Left: Beginning nest. Similar to bluebird and tree swallow but note chicken feathers and debris = signs of a House Sparrow nest.

Species Identification of cavity nesters

Male & female Eastern Bluebird

Fledgling Eastern Bluebird

Female & male Tree Swallow.

Black-capped Chickadee, sexes similar.

House Wren, sexes similar.

Bluebird chick development

- first 14 days

by Jack Bartholmai

This series of images uses "wing development " as an aid in age estimation. Conditions such as food supply, temperature, number of siblings and other factors might alter the development time a +/- of at least one day for each image after day one. When chicks first hatch they are naked, eyes are closed and they barely can raise their head but they are able to open their mouths to be fed. Between the 5th and 10th day the chicks are most vulnerable to cold temperatures when the female stops brooding them. If they get too chilled and listless they won't raise their heads when the adult birds bring them food and may starve. Both adults may stop feeding them and abandon the nest if they don't respond. Monitoring should stop after the 12th day to prevent premature fledging. Normally by the 16th-18th day they are fledged.

All photos by Jack Bartholmai

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