

Eastern Bluebird



Sialia sialis

Species of Bluebirds in the U.S.

Eastern Bluebird



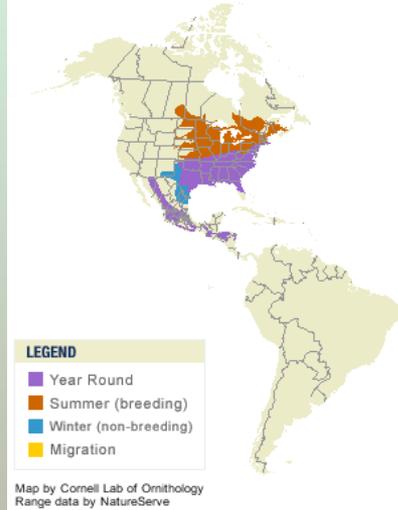
Western Bluebird



Mountain Bluebird



Eastern Bluebird *Sialia sialis*



Western Bluebird *Sialia mexicana*



Mountain Bluebird *Sialia currucoides*



Color Difference in Male and Female Bluebirds



male



female



pair



fledglings

General Biology – Eastern Bluebird

- Length: 6-8 inches
 - Weight: 1 ounce
 - Wingspan: 10-11 inches
 - Average Lifespan: 6-8 years
 - Eat mainly insects, some seeds
 - Lay 3-7 eggs, average is 5
 - Incubation 13-16 days
-
- Passerine (perching bird)
 - Studies suggest that Eastern Bluebirds evolved into a species as long as 2.5 million years ago.
 - Members of the thrush family (Turdidae)
 - Social, but territorial
 - Beautiful, melodic sound
 - Most mate for life, but another mate will be found if one dies



Other “*blueish*” birds
expected in our area



Indigo Bunting





Cerulean Warbler



Northern Parula (warbler)

Not as common, but here occasionally during migration.



Black-throated
Blue Warbler



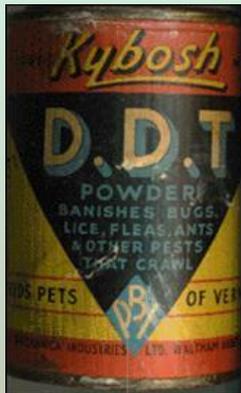
Blue Grosbeak

A Bit of History

The bluebird population in the U.S. was healthy before the mid 1800's, then it declined.



~ 60-70% decline by the 1970's



- loss of suitable **habitat**
- pesticide** use killed insects birds feed on
- competition** with house sparrows & European starlings (introduced species) for nesting cavities
- metal fence posts replaced wood posts that historically had been for **nesting cavities**

- Late 1960s – Bluebird box trails were initiated
- 1978-North American Bluebird Society (NABS) formed
- 1979-US Fish and Wildlife Breeding Bird Survey reported Eastern Bluebirds were "very rare to uncommon" in many areas
- 1980s-90s, bluebird box trails became more popular

“Bluebird populations have made a good comeback – due in large part to the establishment and maintenance of bluebird trails throughout the range of this species”

USFWS



Eastern Bluebird populations increased by an average 2% per year 1966-2010 (*including some years with drastic declines*)

Partners in Flight estimates the current global breeding population at 23 million birds - 21 million are in the U.S.

Birds of North America – On-line Version



Where should you expect
to find Eastern Bluebirds?

What do all of these places have in common?

rural country with scattered trees

Some backyards



meadows and pastures

golf courses and parks

Survival – What do bluebirds need?

FOOD

WATER

SHELTER

SPACE

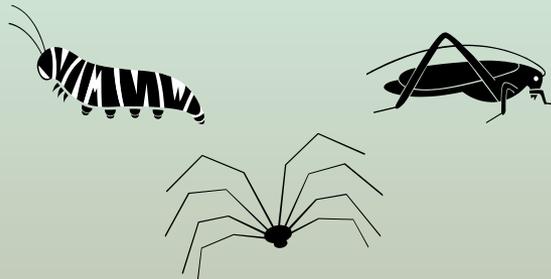
FOOD

insects - grasshoppers, crickets, katydids, beetles, caterpillars, worms, snails, & spiders - 80% of their diet in spring and summer

berries - sumac, hackberries, juniper berries, pokeweed, blackberries – critical from late fall through winter



on occasion – shrews, snakes, lizards, tree frogs



Ground and Brush Foragers

- Use available perches to watch for movement then jump or glide to the nearby ground in efforts to catch the prey
- Can catch insects mid-air
- Will land on bushes or trees for fruit and berries



WATER

- Need fresh water to drink
- Readily use backyard birdbaths for bathing and drinking
- Attracted to dripping water and misters



SHELTER

- Bluebirds are **secondary cavity nesters**
- Will use natural cavities in trees or posts, or nest boxes
- Will sometimes roost in boxes and cavities during winter and cooler months for protection from the cold
- Will often use brushy areas for shelter from cold and storms



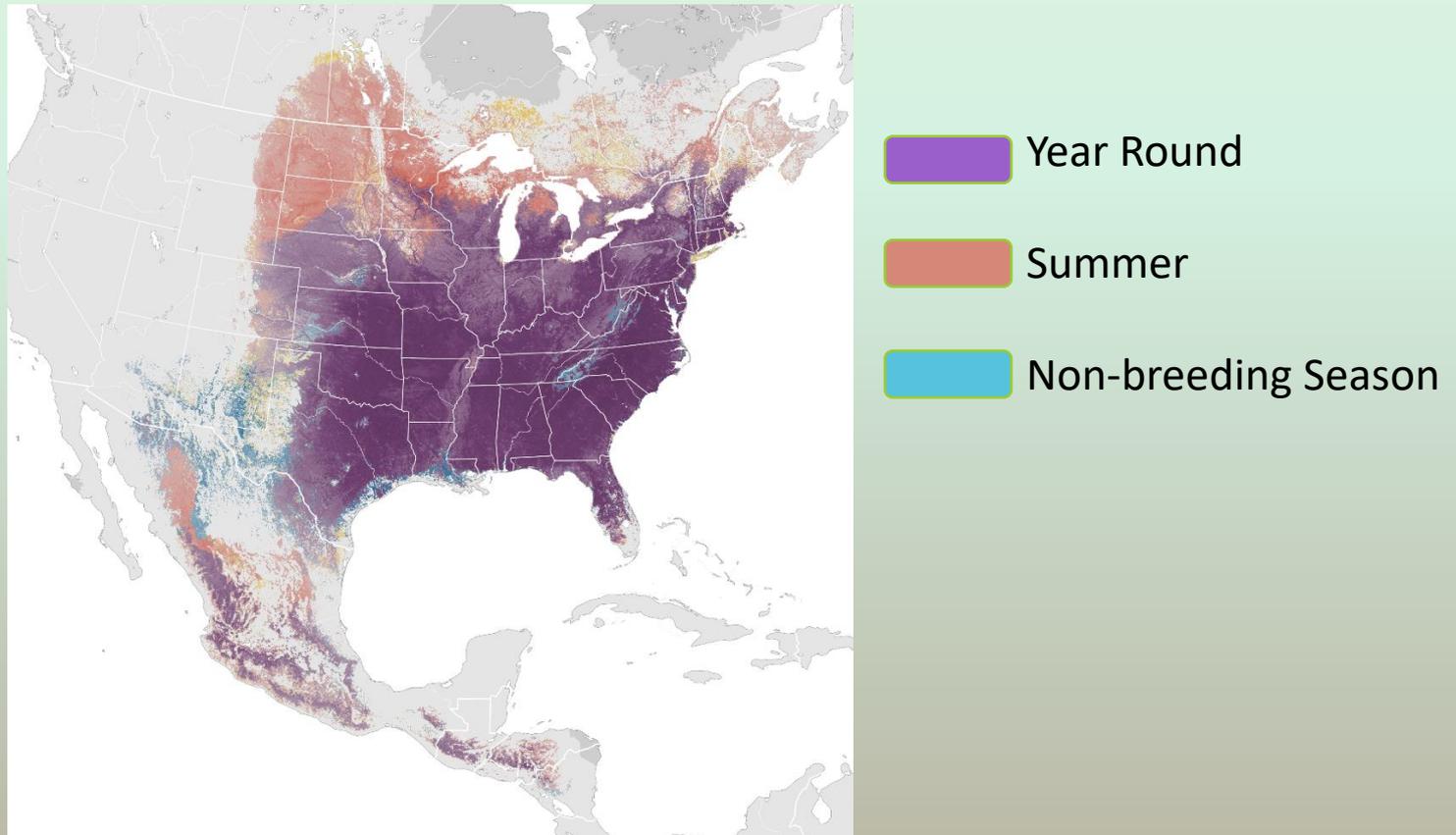
SPACE

- open areas (preferred)
- 2 to 3 acres are defended during nesting season
- may forage on 50-75 acres (including forests) during winter months to find adequate food



Sometimes Eastern Bluebirds migrate, sometimes not, depending on weather and food availability.

Many non-migratory bluebirds remain close to their breeding site year-round which is normally the case here



True or False?

Significant Climatic Events Can Have an Impact on Bluebird Populations

True

➤ **extremely cold winters can have a major impact**

- 1976-77 & 1977-78 an estimated 60% of the U.S. population died
- Some areas, including Tennessee, lost closer to 90%
- The “Big Freeze” of February 2021 resulted in a large decline in populations throughout the impacted area



Christmas Bird Count

15 mile diameter circle

Annually in December

Number of bluebirds seen during the Hagerman CBC:

2016 = 352

2017 = 161

2018 = 215

2019 = 134

2020 = 123

2021 = 22

2022 = 92

5 yr. avg. 197



Bluebirds Are Most Commonly Found

- Open rural country with scattered trees
- Meadows and pastures
- Backyards
- Golf courses and parks
- Often seen sitting on power lines or fences



Who Can Guess?

the oldest known Eastern Bluebird on record
lived to be.....

10 years 5 months old



Behavior and Breeding Biology



Typical Behavior

- 50-60% of the time bluebirds are resting or perching and observing



-Are usually low flying birds

-Preening, fluffing and shaking, scratching, pruning, bathing

-Sunning and roosting

-Walking or hopping on the ground, climbing up trees or wood posts with their feet

-Defending territory by fighting, chasing, pecking, being vocal

-Prefer to nest in the general area of other bluebirds, but want their nest cavity to be +/-120 feet from the next closest bluebird nest

Breeding Behavior

Male bluebirds find a nest site (usually begin scouting in February) then attract a female by carrying materials in and out of the hole, perching, and fluttering their wings



Once “pair bonded” the female builds the nest over 4-5 days

Nest consists of loosely woven grass or pine needles, sometimes finer grasses or hair/feathers line the inside



Nest site selection and materials examples



Defending Their Territory

- Average “area” bluebirds protect during nesting is 2 to 3 acres
- Both sexes may aggressively chase off bluebirds and other species near their nest cavity



Bluebirds
at
Hagerman NWR



Hagerman Nest Box Teams

Formed in 2010

- Initially, three separate “trails“ (53 boxes) were monitored weekly, now there are 46 boxes on 2 “fine-tuned” trails
- Team members work in pairs for nest monitoring



2010
Initial Crew



2010-Friends of Hagerman purchased new & good used boxes, poles, predator guards, and hardware

Box assembly party in early 2011

Nest Box Installation Day 2011



Supplies and Materials Used

- 1" X 7 foot long metal pole placed 2 ft. in ground
- Pole driver
- Bluebird box
- Rust resistant hardware to fasten box to pole
- Metal predator guard for the pole
- Hardware (clamp) to hold guard in place
- "Tanglefoot" on the pole, under the predator guard



Each Box Received a Number





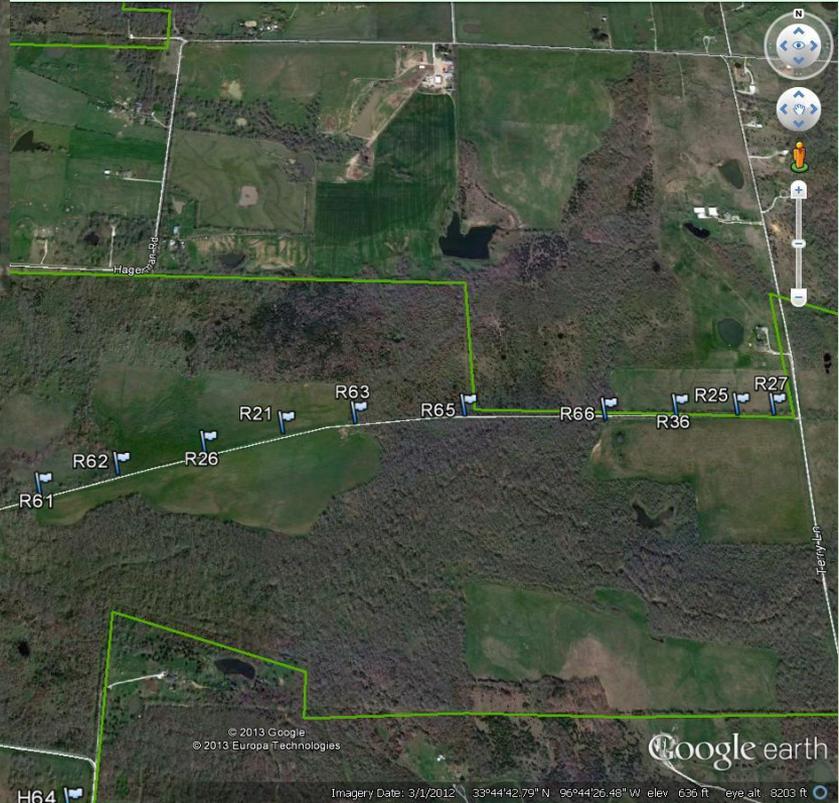
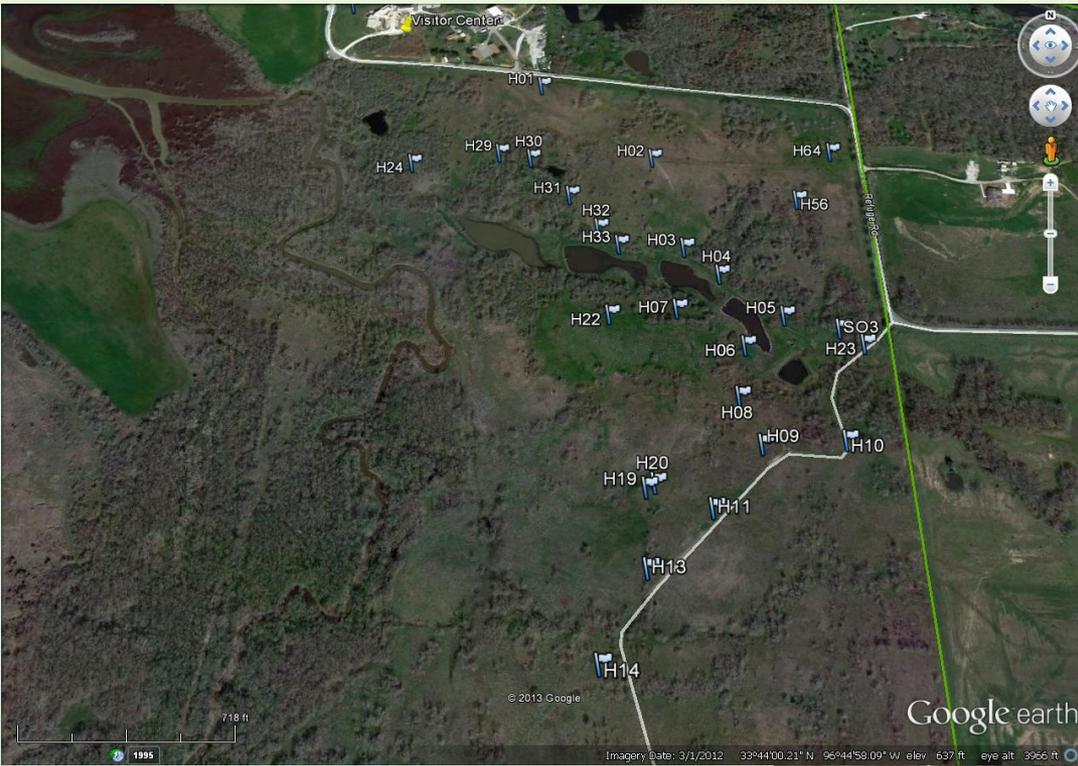
Predator Guards were
added to all poles
Critical For Success

Box Site Preparation

Each spring, the boxes are cleaned out and pests are dealt with as needed. Volunteers mow and trim around each box throughout the nesting season (mid February-mid August)



Nest Box Location Maps Were Developed



Nest boxes have been available for “Adoption” for a few years.
In 2022, 44 boxes were adopted / 23 used for nesting

- Funds go into the FOH bird nest box account for future needs. \$1500 raised for the 2023 season.
- Each adopted box is labeled with the sponsor’s name and they receive weekly email updates with box activity



Original “Bluebird Buggy” Purchased by the refuge to Monitor Harris Creek Trail



An new, electric EZGO Express is used to monitor when it is not too wet



Supply buckets developed to carry everything needed to check and maintain boxes



A camera set to macro is used to take images of what is (or isn't) in the box



Notebooks for Data Collection



Multiple Nest Visits Data Sheet

This form is for your records — use it to locate and describe your nest site and record up to 10 visits to a nest. Use a separate form for each nest monitored and each new nest attempt. See keys on the next page for explanation of codes and fields. If response is "Other" enter "OT"; for "Unknown" enter "U."

Year _____ Species _____

1. Nest Site Location <small>(see key on next page)</small>	2. Description <small>(see key on next page)</small>
Nest Site Name: _____	Nest is located (circle one) <input type="checkbox"/> IN <input type="checkbox"/> ON <input type="checkbox"/> UNDER
Nest Location (nearest street address OR lat/long): _____	Substrate _____
OR	Habitat within one meter _____
Latitude N _____	Habitat within 100 meters _____
Longitude W - _____	Habitat modifier _____
Zip Code _____	Elevation (specify ft. or m.) _____
	Height above ground (ft. or m.) _____
	Cavity orientation _____
	Cavity opening width (specify in. or cm.) _____

3. BREEDING DATA *For columns C, D, E, and J, enter "X" if eggs or young are present, but exact number is unknown. Enter "U" for unknown.

Visits	Date/Time		Host Species*			Status/Activity Codes				Details (Optional)			
	A. Month / Day (1-12) / (1-31)	B. Time (am/ pm)	C.* # of Eggs	D.* # Live Young	E.* # Dead Young	F. Nest Status	G. Adult Activity	H. Young Status	I. Mgmt. Activity	J. Cowbird Evidence	K. Observer Initials	L. Comments below	
Ex	5 / 4	4 pm	4	0	0	CN	AA	-	No	IE 0 0	MS	✓	
1	/												
2	/												
3	/												
4	/												
5	/												
6	/												
7	/												
8	/												
9	/												
10	/												

4. NEST ATTEMPT SUMMARY Fill in the HOST information below after the nest attempt is complete.

IMPORTANT DATES		TOTALS				
First Egg Date	_____	No. of visits	Clutch size	No. Unhatched eggs	No. live young	No. fledged
Estimated Hatch Date	_____					
Estimated Fledge Date	_____					
COMMENTS: _____ _____						

Site Name _____

All data collected are entered into Cornell's online NestWatch Database

Monitors received training on what and what not to do when completing their nest box surveys.



For the 2022 nesting season, Volunteer John VanBebber was the team coordinator.

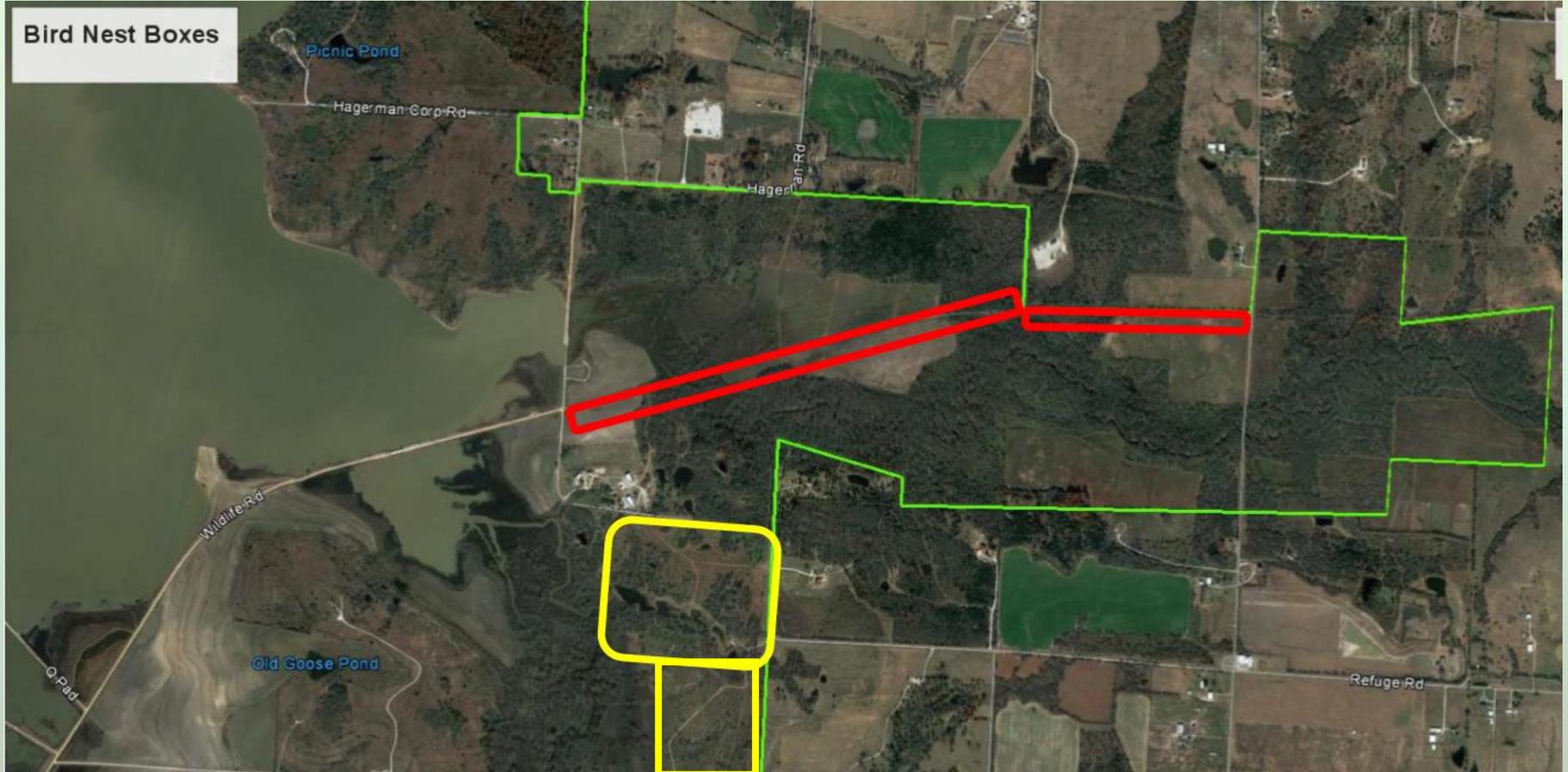


L to R: Bert Garcia, Bill Nance, Gene Cushion, John VanBebber, Kathy Nance, Nancy Cushion, Wes & Teresa Crawford, Cathy VanBebber.
Not included in the photo: Bryon Clark, Margaret Avard and Donna Rogers.

As a back-up plan for muddy days – several volunteers are now certified to operate a UTV



Current Bluebird Box Trail Locations Harris Creek Trail & Raasch Trail



Nest Box Monitoring

Volunteers slowly approach the box and tap very lightly on the outside. The locking screw is loosened to allow the door to open. If there is a nest or partial nest, the species is identified.



Team Leader John VanBebber

Once a nest has been confirmed and the species identified, it's time for a closer look inside



Volunteers use a small mirror to look inside the nest for eggs or young birds, then count what they see as best they can





Most bluebird nests in our area are constructed of dry grass. Where available they often use pine needles.

What Other Common Native Cavity Nesters Do We Have?



Carolina
Chickadee



Carolina Wren



Tufted Titmouse



Eastern Bluebird



Carolina Chickadee



Carolina Wren



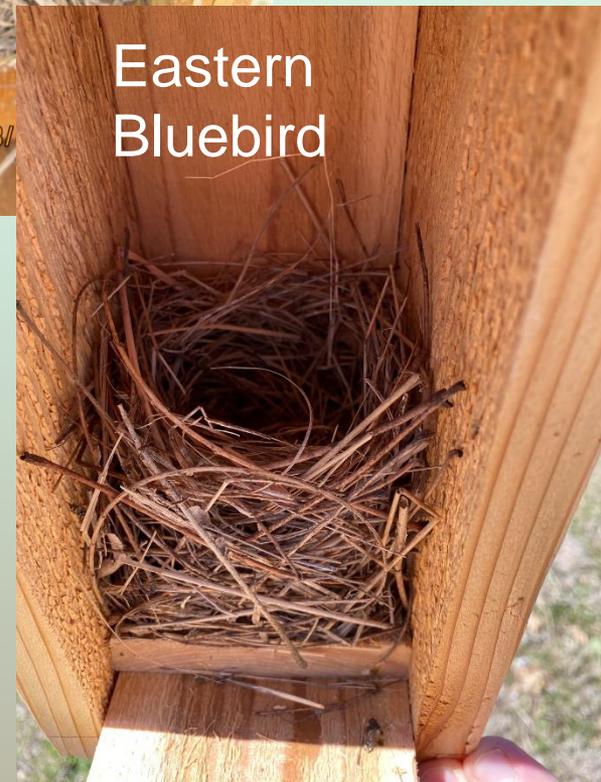
Carolina
Chickadee



Eastern
Bluebird



Tufted Titmouse



Eastern
Bluebird

Tufted Titmouse and Carolina Chickadee nestlings



Bluebird Nesting Timeline

- Typically lay 4 to 5 eggs, one per day
- Female begins incubation after last egg is laid - Comes and goes from the nest except at night
- Average incubation time is 12 to 14 days, then they hatch
- The young birds fledge (leave the nest) 16 to 18 days after they hatch
- Commonly raise two broods per season, sometimes three







95-96% of
eggs are blue

4-5% are white





Incubation
(female)

12-14 days



Altricial

Hatching Day





Early on Day 1



Later on Day 1



Day 2



Day 4



Day 6



Day 9

A whole lot of feeding for the first couple of weeks!



Both parents feed the hatchlings.



House cleaning – adults remove droppings left by the young



Day 10



Day 12



Day 13



Day 14

Ready to Fledge!



Young birds approach the opening, look out, then eventually jump one by one. If one of them takes too long, the parent sometimes goes in and “encourages” them.



Parents lure the fledglings to near by cover (usually vegetation) for around 10 days. They pass along “life skills” and it is 3-4 weeks before they begin to feed themselves.

Young birds often stay near the parents until the next spring. At that point, they are often “encouraged” to go elsewhere. They will often breed their first spring season.

On Average

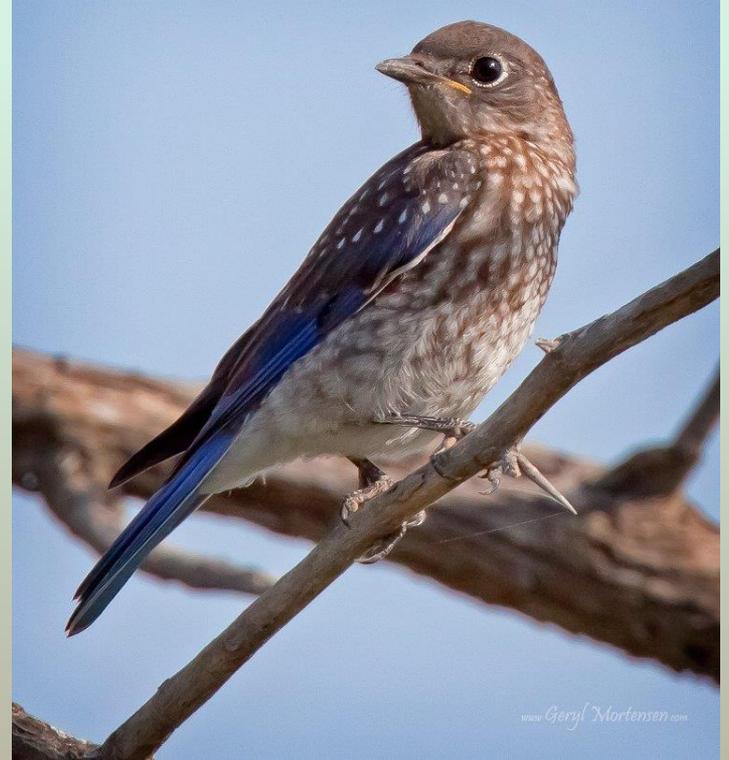
83% of eggs laid will hatch

75-90% will fledge the nest cavity

40-50% will survive the first year, then 40%-50% of those will survive the next year, etc.



Juvenile Bluebirds



Once they fledge, the parents keep them mostly out of sight, laying low & hiding for a couple of weeks. After that, they often bring them to a water source to drink and bathe.



Feeding by both parents continues 3-4 weeks until they learn to forage on their own.



2022 Birds Fledged @ HNWR

- ❖ 58 bluebirds
- ❖ 28 chickadee, Carolina wren, and tufted titmouse combined



2010-2022 Nest Box Production Hagerman NWR

1,593 Eastern Bluebirds Fledged

Other Species Fledged = 573

- ~ Carolina Wren
- ~ Tufted Titmouse
- ~ Carolina Chickadee
- ~ Prothonotary Warbler
- ~ Bewick's Wren



Data From Monitored Refuge Nest Boxes

2020 - 55 nesting attempts, 130 birds fledged

2021 - 10 nesting attempts, 41 birds fledged

2022 - 21 nesting attempts, 58 birds fledged

February 2021

- 10 days straight of temperatures that did not rise above 32 degrees
- Food for bluebirds (insects & seeds) was not available
- Many birds literally starved and/or froze to death

Bluebirds are known to huddle together in one location to use their collective body heat to help survive periods of cold weather and even arrange themselves to avoid smothering.

The refuge bluebird nest box program is more important than ever for helping bring back a healthy population of birds.



Some of You may be thinking...

“I want a bluebird to use my box-not a chickadee!”

What can you do to help make the box less inviting to chickadees, wrens, or titmice? Place it in an open area.

If possible offer a second box nearby with trees around it. If not, put the second box in the proximity of the one you want bluebirds in and hope they are aggressive enough to fight off competitors for at least one of the two boxes.



Dealing with Threats and Pests



House Sparrows
(remove immediately
when you are
certain it is a house
sparrow nest)



Fire ants



Blowfly and larvae



House Sparrow



Female

The only boxes we have had house sparrows in were near the facilities.



Male

Wasp & Mud Daubers



Ivory Soap is used inside on the box top to help deter wasps and daubers

Cleaned out weekly during box checks



It is critical that a predator guard be installed to keep out.....



Raccoons and other climbing mammals



House cats



Snakes



A substance called “tanglefoot” is spread on the pole below the predator guard to capture any ants that try to crawl up from the bottom



15 oz. tub = \$10

Available at Tractor Supply or online



Organic brown paste made of castor oil, waxes, and resins

Make sure the strip of tanglefoot is applied as high as possible underneath the predator guard

Do not use tanglefoot without the predator guard to cover it since many native birds attempt to perch on a vertical pole



What Causes Most Bluebird Deaths?

Exposure

- freeze or heat wave

Predation

- In nest box - rat snake, squirrel, raccoon, house cat, other birds, fire ants, wasps, opossum, weasel
- Adults - hawks, house cats, bobcat, fox

Fight with another bird

Vehicle collision

Pesticides



I want bluebirds to nest in my yard! How do I attract them?

First....a few questions

Do you have habitat at least somewhat suitable for bluebirds?

Will you put up a proper bluebird box with a predator guard?

Do you have time to commit to monitoring the box weekly?

Can you provide and maintain a source of fresh water?



Provide plants that produce seeds bluebirds will eat



sumac



red cedar



hackberry



pokeweed



holly berries

Access to fresh water





Bluebirds love mealworms which can be purchased online both live and dried

Old bluebird nest materials – should they stay or should they go?

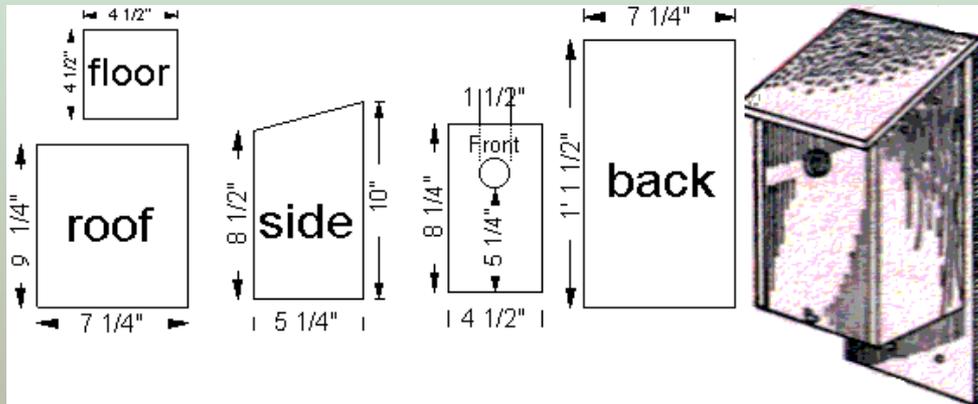
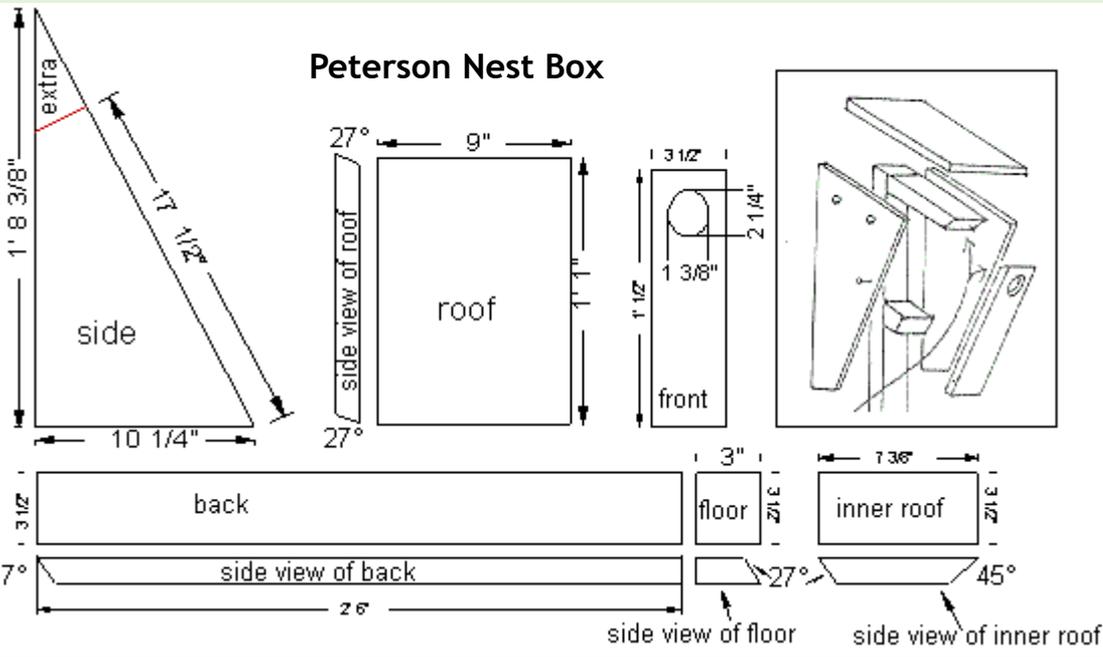
Sometimes bluebirds will build a new nest on top of one they just used. If that happens, leave it.

At the refuge, we remove all old nests (taking it far away) and prepare the box for a new one. This may help control ectoparasites such as lice, mites, ticks, fleas and flies.



Bluebird Nest Boxes – Which is the best????

There are Many Different Designs



Eastern & Western Bluebird Nest Box

Bluebird Nest Boxes

- **Use a correct box – there are several types to choose from.**

- Must have a 1½ inch round hole or 1 3/8 inch oval hole
- Box in place and ready by late February/early March
- Well ventilated and able to drain
- Mount 4-6 feet off the ground, on a pole away from trees and fences
- 120-250 feet apart is best
- No perch at opening
- Cedar is a good material for boxes
- Predator guard is a must
- A hole protector may be needed if you have active woodpeckers in the area



 **PLEASE DO NOT**

- **Put up a box unless you WILL monitor it**
- **Open the box after the 12th day following hatching**
- **Remove any bird nest other than house sparrow**

I encourage you not to make an assumption that bluebirds likely will not nest in your yard because of the surroundings.

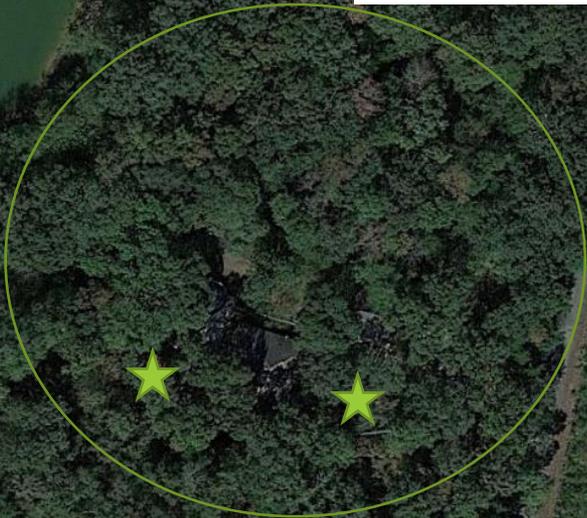
You might just be surprised.....

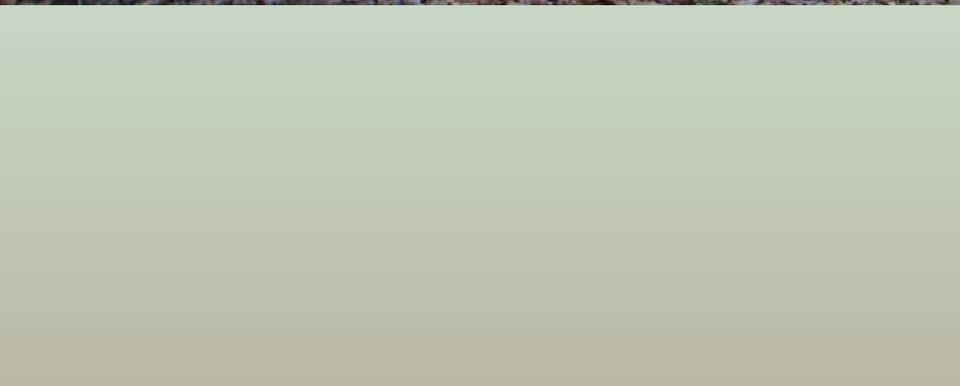


Where would you expect Bluebirds in this area?



How about here?







Even in a very wooded area, bluebirds used one of the two existing boxes every year 2012-2021.



Birds-eye view from box

Keys to Successful Bluebird Nest Boxes

- Suitable habitat
- Correct box placement
- Correct size box and opening (hole = 1.5")
- Up early enough in the year (or leave up)
- Predator guard!
- Keep ants from accessing box
- Monitor weekly to deal with any problems that arise
- Don't use pesticides in your yard



References for Bluebirds and Boxes

~Nest box plans can be found on each of these websites~

North American Bluebird Society

<http://www.nabluebirdsociety.org/>

Texas Bluebird Society

<http://www.texasbluebirdsociety.org/>

Cornell Lab of Ornithology

<http://www.birds.cornell.edu>

Bluebird Nest Box Plans

<http://www.texasbluebirdsociety.org/documents/nestboxplans.pdf>

Bluebird Information and Awareness

<http://www.bluebirdnews.com/>



Happy Bluebirding

