

West Street/Bailey Lane Aquifer Fields - Georgetown, MA Nest Box Summary Report – 2021

Overview

The West Street Aquifer Field (WSAF) is located off West Street in the field behind the Georgetown Athletic Field, and the Bailey Lane Aquifer Field (BLAF) is situated off Bailey Lane in Georgetown, MA. The nest boxes provide nesting sites for Eastern Bluebirds (EABL) and Tree Swallows (TRES). There are 5 nest boxes in West Street location situated in the back field that is not used for soccer. In the Bailey Lane Aquifer, there are 3 nest boxes. Both sites are near the Parker River as well as extensive wetlands adjacent to the river, which are protected public land managed by the Georgetown Water Department. This area is attractive to Eastern Bluebirds as well as Tree Swallows that can be often observed flying over open water foraging for insects and other aerial plankton. Nest box data has been shared with the *NestWatch* Program of the Cornell Lab of Ornithology (CLO). By participating in this program, nest data was available to download as Excel spreadsheets that were most helpful for reviewing and organizing data.

Nest identification of these avian species is relatively straightforward. Tree Swallow eggs are approximately the same size as bluebird eggs but entirely white. In contrast, Eastern Bluebird eggs are a robin's egg blue with no markings. The egg-size of each species is approximately 0.8 inches in length. The typical clutch size ranges from 3-5 eggs and 4-6 eggs for bluebirds and swallows, respectively. Both species build similar cup-shaped nests using dried grasses that are commonly found in the area of the nest. Tree Swallows characteristically line their nests with white feathers while Eastern Bluebirds construct sparsely lined nests.

Typically, bluebirds will not nest within 200-300 feet of another pair of bluebirds. On the other hand, swallows are more social and less restrictive regarding nesting separation and their breeding territory range. Surprisingly, bluebirds and swallows show little reluctance to nest near each other. A reason for this disparity could be that they exploit different foraging stratum. Bluebirds prefer foraging near or on the ground often swooping from a perch to seize prey, a strategy referred to as "hawking". In contrast, swallows are aerial foragers gathering prey in flight often well above the ground. Both avian species feed predominantly on insects and other small invertebrates. Interestingly, the Tree Swallow is the only swallow breeding in North America that includes berries in its diet. Due their mixed diet, Tree Swallows are able to return

earlier and migrate later from their breeding grounds than any other swallow in North America. Bluebirds also supplement their diet with berries especially during winter but do not migrate.

Nest Box Monitoring

Bluebirds may attempt their first nest early in April, while swallows tend to delay nesting until



Photo 1. Nest Box in West Street Field

later in the month or even May, and have finished their nesting activity by July. Both April and May can present cold and wet weather with limited food opportunities making nesting success challenging. The Tree Swallow is single brooded while the Eastern Bluebird may have 2 or 3 broods per season. In the West

Street field, the estimated-first-egg-

dates (EFED) for the first clutches of bluebird and swallow eggs were April 15st and May 15th, respectively. In the Bailey Lane Aquifer field, the EFED for the first clutches of bluebirds and swallows were April 15th and May 18th, respectively. The EFED for the black-capped chickadee nest (Photo 2) was April 30th. Unfortunately, the chickadee nest unsuccessful. As is often the case, predation and severe weather are the most common causes for nest failures.

The NestWatch *Protocol for Monitoring Nests* (Appendix A) was utilized as a guide for monitoring nest boxes. A *Trouble-Shooting Guide for Nest Box Landlords* is found in Appendix B. This guide is helpful for determining the cause of nest predation. For instance, under the first column of this guide (*what you might find*) you will notice in the 1st



Photo 2. Black-capped Chickadee Nest in Nest Box 2BL – May 6, 2021

block down, *eggs or nestlings missing, nest in tacked*. Moving across to column 2 (1st block down), you will discover that the possible cause of this event could be due to snake, rodent, House Wren predation. In the third column, the guide suggests to *install a predator guard or baffle to the box pole*.

Table 1 highlights the nest box data from 2021 for WSAF and BLAF, including the total number of nest attempts and the number of attempts that produced at least one fledgling. Also, included in the table are the total number of eggs, nestlings and fledglings produced. A nest attempt is any nest with at least one egg present, and ends once the nestlings fledge or the eggs fail to hatch or the nestlings perish. During 2021, bluebirds produced a total of 17 eggs and 8 fledglings while swallows produced 34 eggs and 25 fledglings. For the first time, black-capped chickadees made a nest attempt. This nest was constructed in nest box 2BL in the Bailey Lane Aquifer site (Photo 2) but was unsuccessful. Tree swallows apparently displaced the chickadees from their nest, and constructed their nest above the chickadee nest, which had six eggs. Yes, even tree swallows can be predators. As seen in these fields, predation and severe weather are the most common causes for nest failures. In the future, weather will continue to pose even greater challenges with more frequent heat waves, extended droughts, heavy precipitation events and even colder springs which will defy every nest attempt.

Table 1. Nest Box Data at WSAF and BLAF from 2021

Location	Species	Total # Nest Attempts	First-Egg –Date of Season	Total # of Eggs	Total # of Nestlings	Total # of Fledgling	Nest Attempts with 1 or more Fledglings
WSAF	EABL	2	04/15/2021	5	4	3	1
	TRES	5	05/15/2021	25	23	22	5
BLAF	BCCH	1	04/30/2021	6	0	0	0
	EABL	4	05/15/2021	12	6	5	2
	TRES	2	05/15/2021	9	9	3	1

Paper wasps continued to be a problem at both sites, frequently constructing nests inside nest boxes. Fortunately, once bluebirds and swallows occupy a box, they will readily evict these intruders but are less likely to accept a box occupied by wasps.

Recommendations

The following recommendations should be considered:

- 1) The recent MAS report, *The State of the Birds*, indicates that many of our obligate grassland birds such as the American Kestrel, Upland Sandpiper, Savanna Sparrow, Grasshopper Sparrow, Vesper Sparrow and Eastern Meadowlark, are exhibiting significant downward population trends. The occurrence of kestrels and meadowlarks nesting near or in the field should be documented and MAS alerted. In the case of Vesper and Grasshopper Sparrows, the Natural Heritage and Endangered Species Program (NHESP) needs to be notified as well.
- 2) Nest box inspection prior to the breeding season should be conducted to ensure old nesting material has been removed and the boxes are clean and as weather-tight as possible. Caulking cracks and spaces that have developed due to weathering and aging will help minimize weather-related fatalities. Predator guards must be maintained to deter mice, snakes and raccoons.
- 3) Since the nest boxes are showing signs of deterioration, replacement needs to be considered. To optimize field location and monitoring efficiency, it is recommended the replacement boxes be paired allowing a distance of about 20 feet between the paired boxes. Hopefully, local Boy Scouts or another civic-minded group would be willing to undertake this project.

Summary

Early last century bird watchers noticed that the numbers of their beloved bluebird were diminishing. Conservationists noted that bluebird habitat was disappearing and the number of natural nest cavities was becoming ever scarcer. The Bluebird was also now competing for nest cavities with the House Sparrow and Starling that had been introduced from Europe. Bluebird conservationists like Lawrence Zeleny, implemented conservation measures to reverse this trend. Throughout the eastern part of the country, concerned conservationists and bluebird enthusiasts began erecting nest boxes specifically designed to attract bluebirds and coincidentally Tree Swallows. These boxes are often even used by bluebirds to conserve body heat on cold nights in the winter. A series of strategically placed nest boxes became known as bluebird trails. As revealed in *The State of the Birds* published by the MAS in 2013, the Bluebird has successfully

rebounded and is now experiencing an increasing population trend. The news is somewhat positive for the Tree Swallow as well. Unfortunately, the report for many field birds is not so optimistic, such as the American Kestrel and Bobolink and several native sparrows.

During 2021, bluebirds produced a total of 17 eggs and 8 fledglings while swallows produced 34 eggs and 25 fledglings. Tree swallows fared better in the West Street field, though 3 eggs failed to hatch, all nestlings successfully fledged. The lower nest productivity for swallows in the Baily Lane Aquifer site was due to extreme heat and a heavy precipitation event that dampened the nest causing all nestlings to perish from hypothermia.

RESOURCE INFORMATION

- ✓ Cornell Lab of Ornithology Program.
<http://watch.birds.cornell.edu/nest/home/index>
Bird Guide ... <http://www.allaboutbirds.org/guide/search>
NestWatch ... <http://nestwatch.org/>
NestWatch Digest 2015 ... <http://nestwatch.org/connect/news/our-year-end-report-is-here/>
- ✓ Salias ... <http://www.sialis.org/index.html>
- ✓ How to Create and Manage Tree Swallow Nest Boxes
<http://www.treeswallowprojects.com/index.html>
- ✓ Ehrlich P.R., Dobkin D.S., Wheye D. 1988. *The Birder's Handbook – a Field Guide to the natural History of North American Birds*. Fireside Book Published by Simon & Schuster Inc.
- ✓ Massachusetts Bluebird Association ... <http://www.massbluebird.org/>
- ✓ Mass Audubon Society, 2013. *The State of the Bird*. <http://www.massaudubon.org/our-conservation-work/wildlife-research-conservation/statewide-bird-monitoring/state-of-the-birds>
- ✓ Mass Audubon Society. *Birds to Watch Program*, American Kestrel.
http://www.massaudubon.org/Birds_and_Birding/birdstowatch/kestrels/howyoucanhelp.php
- ✓ New England Nature Bluebird Information ...
<http://www.nenature.com/EasternBluebird.htm>
- ✓ North America Bluebird Society ... <http://www.nabluebirdsociety.org/>
 - Bluebird Nest Box Plan ...
<http://www.nabluebirdsociety.org/PDF/NABS%202020%20Eastern%20-Bluebird%20Nestbox%20Plans.pdf>
- ✓ Peterson R.T., 1980 4th Edition. *Eastern Birds*, Peterson Field Guides. Houghton Mifflin Company, Boston
- ✓ Sibley D.A. 2003 First Edition. *The Sibley Field Guide to Birds of Eastern North America*. Alfred A. Knopf, New York.
- ✓ Sibley D.A. 2009. *The Sibley Guide to Bird life & Behavior* / illustrated by David Allen Sibley ; edited by Chris Elphick, John B. Dunning, Jr., David Allen Sibley. Publisher: Alfred A. Knopf, New York
- ✓ Tree Swallow Project/How to Manage Tree Swallow Nest Boxes ...
<http://www.treeswallowprojects.com/index.html>
- ✓ Zeleny L. 1978. *The Bluebird*. Indiana University Press

Some Interesting Nest Box Facts

Eastern Bluebird: *Sialia sialis* - 7 inches in length

Voice: Call note – chur-wi or tru-ly Song – 3 or 4 soft gurgling notes

Favored Habitat: Open country with scattered trees, farms, along roadsides.

Nest: Cavity; either natural tree hole, or bird box. Built by female; a loose cup of grasses, weed stems, pine needles, twigs, occasionally with hair or feathers. Built in 1-6 days.

Egg laying: 5-7 days (sometimes more) – one egg per day, with at least one day in between eggs.

Eggs: 3-6, usually 4-5; pale blue, occasionally white, unmarked; 0.8”

Incubation period: 12-14 days

Nesting Schedule (after hatching):

Day 1: Bright coral-pink skin, eyes sealed, down in sparse tufts.

Day 2 – 4: Wings, head and spine look bluish due to developing feathers under skin.

Day 5 –7: Feather sheaths begin to emerge on wings. Eyes still closed.

Day 8 – 11: Eyes open! Feathers sheaths continue to grow.

Day 11 – 12: Feathers of wing and tail reveal cobalt blue in males, duller gray-blue in females.

Females also show white edging on outer tail feathers.

Day 13: CUT OFF DATE FOR BOX CHECKS! Fully feathered young become increasingly active, and may fledge prematurely if box is opened.

Day 14 – 22: Fledging occurs and first flights.

Young remain in cover while parents bring food.

Day 30-on: Fledglings feed on their own.

2-3 Broods per season

For comparison:

Tree Swallow

Nest: Somewhat similar to bluebird but mostly grasses and lined with feathers.

Eggs: 4-6, pure white without gloss; Incubation: 13-16 days; 1 brood

House Sparrow

Nest: Huge ball of grass, weeds, trash with opening on side; very messy; lined with feathers, hair or string.

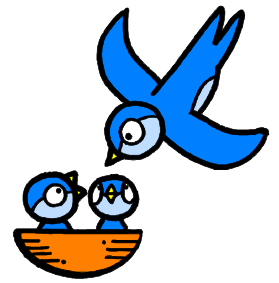
Eggs: 3-7, white, greenish white; spotted with grays and browns. Incubation: 12-13 days; 2-3 broods

Online Resources:

New England Nature Bluebird Information ... <http://www.nenature.com/EasternBluebird.htm>

North America Bluebird Society ... <http://www.nabluebirdsociety.org/>

How to Manage Tree Swallow Nest Boxes ... <http://www.treeswallowprojects.com/index.html>



Appendix A ... NestWatch Protocol for Monitoring Nests

*We recommend a **maximum of 8–10 visits spread out** over the course of the nesting attempt. As a general rule, if you **check nests every 4–5 days**, you will be closely following the protocol below.*

Nest Building (1 visit, if possible)

If you are fortunate enough to find an active nest **while it is being built**, be sure to record the status of the nest on the **datasheet**.

Egg Laying Period (1 or 2 visits)

Make at least **one visit during egg laying**, preferably in the **afternoon**. If you find a **nest with eggs, go back three days later** to determine if the number of eggs has changed. This will help determine first egg date and the egg laying rate. For songbirds, the typical laying period lasts between three and eight days, with eggs laid one per day, usually early in the morning.

Knowing the date the first egg was laid is critically important and easy to determine if you can visit during the egg laying period. For example, if two eggs are in the nest on May 10 and four eggs on May 13, then counting backward one egg per day, we know the first egg was laid on May 9. The second egg was laid on May 10, the third on May 11, and the fourth and last egg on May 12.

Whenever possible during nest checks, wait for the female to leave the nest rather than flushing her off. **Record the number of eggs**, if known, along with any **adult activity** you observed, on your datasheet.

Incubation Period (2 visits)

Make **two visits, preferably in the afternoon**. We suggest one visit at the middle and one at the end of incubation to determine complete clutch size and whether eggs have been lost. Most songbirds begin incubating the day before the last egg is laid and will typically incubate eggs for 11 to 14 days. **Record the number of eggs**, if known, along with any **adult activity** you observed, on your datasheet.

Hatching Period (1 visit)

Visit **once at or just after hatching** to pinpoint the timing of hatching and determine the number of hatched eggs. Most songbird eggs hatch within 24–48 hours of each other. If you see adults carrying food, this is a good sign that eggs have hatched. Check the nest contents and **record the number of eggs, observed adult activity, and status of young** on your datasheet.

Nestling Period (2 visits)

Visit **once when young** are thought to be **between five and seven days old** to determine their development and survivorship. Visit **again three or four days later** to get an estimate of the number of young likely to fledge.

Do not open nest boxes or disturb nests with fully feathered young, as this can cause premature fledging. Once the young are fully feathered, you can check the nest from a distance with binoculars to determine if the parents are still actively feeding the young.

Typical songbird nestling periods last approximately two to three weeks. **Record your observations for number of eggs (if any), observed adult activity, and status of the young** on your datasheet.

Appendix A continued

Fledging Period (1 visit)

Visit **once to determine success or failure of nests**. Do not open nest boxes or disturb nests that have fully feathered young, as this can cause premature fledging. Most songbirds fledge within one to two days of each other.

Check the nest from a distance and look around for the adults. If they go to the nest carrying food, the young have not yet fledged. If they go somewhere else, it is likely they are feeding the young in nearby vegetation.

If you are certain the young have fledged, check the nest and make sure it looks intact, i.e., flattened, and in some cases covered in fecal matter. If it appears disheveled or depredated, describe what you see on your data sheet and look for any signs of the nestlings (feathers, body parts, bones) in the area surrounding the nest site.

If you suspect predation has occurred, try to determine the predator by looking around the nest site for clues. If adults are still present, continue monitoring their activity as they may try to nest again. **Record the outcome, estimated number of fledged young, and additional comments** for the nest attempt on the datasheet.

Post Fledging Period (1 visit)



Visit the nest **one last time** after you are certain that all the young have fledged to **determine if any unhatched eggs or dead young remain**. Record additional comments for the nest attempt on the datasheet.

Stay alert—birds that raise more than one brood per season may nest again nearby. If possible, try to keep monitoring nests to the end of the season, July or August. If you find another active nest, please follow the same protocol. Use a separate datasheet for each new nest attempt

Appendix B ...Trouble-shooting Guide



Trouble-shooting guide for nest box landlords

<i>What you might find:</i>	<i>What may be the cause:</i>	<i>What you could do:</i>
<ul style="list-style-type: none"> ◆ Eggs or nestlings missing, nest intact 	Snake, rodent, House Sparrow, House Wren 	<ul style="list-style-type: none"> ◆ Install predator guards or baffles on the box pole ◆ Move boxes away from areas where House Sparrows are prevalent ◆ Place House Sparrow deterrents or excluders on the nest box. ◆ Move boxes away from prime House Wren habitat
<ul style="list-style-type: none"> ◆ Eggs or nestlings missing or on ground under box. ◆ Nest disturbed, partially pulled out of hole, or on ground under box. ◆ Adult feathers scattered on ground below box. 	Raccoon, cat, squirrel, human vandalism 	<ul style="list-style-type: none"> ◆ Install predator guards or baffles on the box pole ◆ Install boxes high enough so cats can't leap from the ground to the box roof ◆ Place box away from trees or fences to prevent raccoons and cats from climbing or jumping to the box ◆ Securely close box with screws or nails
<ul style="list-style-type: none"> ◆ Eggs on ground under nest, nest intact and tiny holes pecked in eggs. ◆ Nestlings dead in box and with signs of trauma, especially around the head. ◆ Adult dead in nest, signs of trauma, especially around the head. 	House Wren, House Sparrow Note: Dead adults and nestlings more likely due to House Sparrows	<ul style="list-style-type: none"> ◆ Move boxes away from areas where House Sparrows are prevalent ◆ Place House Sparrow deterrent or excluders on the nest box. ◆ Move boxes away from prime House Wren habitat
<ul style="list-style-type: none"> ◆ Eggs fail to hatch. ◆ Nestlings or adults dead in box, no signs of foul play 	Infertile eggs, runt eggs, female disappeared, bad weather, chemical poisoning, nestlings or adults could not climb out of box	<ul style="list-style-type: none"> ◆ Don't use lawn, garden, and insect chemical products ◆ Discuss possible chemical application problems with neighbors, golf courses, etc. ◆ Install fledgling ladder or roughen up the inside of the nest box directly under the entrance hole ◆ Some things are beyond our control