

Eastern Bluebird Early Egg Viability Outcomes- A Mini- Study

By Penny Brandau and Paula Ziebarth

“Ask Madame WingNut” for this issue of the OBS newsletter is coauthored by two Madame WingNuts: Penny Brandau and Paula Ziebarth. Penny lives in Lorain County (northeast Ohio) and Paula lives in Delaware County (central Ohio).

Early last spring, both of us had Eastern Bluebirds laying clutches in our backyard nest boxes. The laying of both clutches began on 3-24-15. We were concerned because weather forecasts had temperatures dipping well below freezing during nighttime hours. We decided to keep weather data and observe the outcomes of these early nesting attempts.

Both of us feed Eastern Bluebirds during the winter months. Penny always feeds dried mealworms and often adds dried currants. Sometimes she sets out sterilized crushed eggshells in the spring and summer and usually live mealworms once or twice a day. She also feeds “Bluebird Nuggets”, little balls of suet mix that can be bought online or at her local bird supply store. Paula feeds a homemade suet mix containing suet, corn meal, whole wheat flour, shelled sunflower seeds, chopped peanuts, currants, and peanut butter. During winter months, birds flock together for safety and warmth and forget their territorial disputes. It is not unusual to have over a dozen Eastern Bluebirds at the feeders or heated bird bath during winter months.

Paula and Penny have noted that suburban Bluebirds receiving supplemental feeding during winter months often begin nesting earlier than their rural brethren that rely on natural food stores. Last spring, it seemed the well fed birds were making early nest attempts for both of us, but how would these attempts fare with cold weather in the forecast?

Penny's Backyard Nest History:

Penny noticed that nest building actually began on March 4, 2015 by the bluebirds in her back yard and their nest was complete by March 16th. The following photos are of her bluebirds' nesting attempt.



Nest building started on 3/4/15. A few grasses were seen on the floor of the box.



Date of above photos: 3-16-15 5:08pm Complete nest



Date of above photos: 3-25-15 6:22pm and 6:27 pm Two eggs/sparrow spooker



Date of above photo: 3-27-15 5:40 pm Snow and cold! Second photo: 3-28-15 7:55 am

On 3-25-15 at around 6 pm Penny noted 2 bluebird eggs in her nest box. Her husband installed a sparrow spooker over the box roof. Sparrow spookers have routinely been used by Penny in previous years (after the first bluebird egg in a clutch is laid) and so the nesting pair readily accepted its presence on that day as evidenced by the female's prompt entry into the box after the spooker was put up.

On 3-26-15, Penny observed 3 eggs in her nest box. One female and two male bluebirds were almost continuously observed in the back yard from 6pm until 7:50 pm when the female was observed to

smoothly fly into the nest box where she remained. The following day, the female had laid her fourth egg, but was observed entering the box several times during the day. Was she beginning early incubation before the clutch was done due to cold weather conditions or was she somehow just adding her body warmth to the box to keep the eggs from freezing? All five eggs hatched on 4-11-15, fourteen days after the last egg was laid. If she had started incubation early, it would seem eggs would have had an asynchronous hatch. These young all successfully fledged on 4-28-15. This bluebird pair had a second nesting attempt started on 5-11-15 with 5 eggs which hatched on 5-28-15 and fledged on 6-13-15. A third nesting occurred on 6-24-15 with 4 eggs which hatched on 7-10-15 and fledged on 7-27-15

Paula's Backyard Nest history:

On 3-25-2015 Paula observed 2 eggs in her backyard bluebird nest. This first nesting had 4 eggs by 3-28-15. Paula did not observe her female spending the night in the nest box during egg laying and typically this is not the case. The female abandoned this first attempt and covered the eggs with nest material (i.e. eggs not viable) so Paula removed this clutch and left the nest.

On 4-4-15 the female laid the first egg of her second clutch. There were 5 eggs in this clutch but two of them were cracked and removed by Paula. Although 3 eggs remained in this second clutch they apparently were not viable as the female went on to start a third clutch, laying 4 new eggs in the nest with the 3 old ones. (Picture of 7 taken on 4-16-15) It can be seen in the photo that one of these 7 eggs is cracked – probably one of the 3 from the second clutch. It is unknown why the second clutch did not hatch but weather was unlikely to be the culprit since the only night below freezing was the night the first egg was laid and the low temperature was 30 degrees that night. Paula's photo dated 4-21-15 shows 6 eggs in the nest. 4 of those eggs hatched on 4-30-15 and all fledged on 5-16-15. Incidentally the nest actually fledged 5 as a foster chick was placed in there!

The birds started their second successful clutch/brood on 6-7-15, laying 5 eggs and fledging 5 on July 11, 2015.



Paula's 4-16-15 photo



Paula's 4-21-15 photo



Paula's Triton Nest Box

Why did Penny's birds have a successful first clutch and Paula's didn't? Did nest box design have something to do with it? There are differences in the two box designs. Both boxes are front opening.

Penny's box is an inexpensive cedar nest box purchased from Walmart. Side walls on this box are 11/16 inch thick and the inside floor dimensions are 3 ½ inches by 4 inches. Height from the floor to the bottom of the entry hole is 4 inches and the height of box from center of floor to center of ceiling is 8 ½ inches. Entry hole is 1 ½ inch diameter circle. A ventilation slot is 5/8 inch by 4 inch at the top of the front panel.

Paula's box is a Triton, built by Tom Comfort. Side walls are 3/8 inch thick LP siding (engineered wood). Floor is 7/8" thick pine and inside floor dimensions are 3 ½ inches by 4 inches. The sloping front provides a 15 square inch area at nest height. Front of box is constructed of 7/8" thick cedar and has a Gilwood entrance (2 ¼" by 2 ¼"). Box has a double roof: 7/8" thick pine topped with ¾" thick white PVC trim. There are no vents in box and it is designed to turn in the wind, orienting entry hole away from prevailing winds.

Looking at weather data, as expected, temperatures in northern Lorain County were colder than those in central Ohio during this period. According to Keith Kridler, eggs can actually survive a light freeze or two or three if they have not started incubation.

Below is weather data from Wunderground for both our locations, along with egg laying schedule. On several days during the egg laying period the temperatures dropped below freezing. In both locations this occurred on day one, day four, and day five of the laying period. The low temperature in northern Lorain County on day two was also below freezing. The low temperatures on day five were 15 degrees at Penny's nest site and 16 degrees at Paula's location.

DATE	PENNY'S NEST			PAULA'S NEST		
	High Temperature	Low Temperature	# Eggs	High Temperature	Low Temperature	# Eggs
3-24-15	37	19	1	48	23	1
3-25-15	55	27	2	64	42	2
3-26-15	44	34	3	46	36	3
3-27-15	35	19	4	34	21	3
3-28-15	27	15	5	32	16	4
3-29-15	43	19		48	19	4
3-30-15	54	37		57	36	
3-31-15	53	30		64	34	
4-1-15	60	28		64	28	
4-2-15	62	44		64	46	
4-3-15	60	37		62	44	
4-4-15	48	30		52	30	1
4-5-15	63	42		62	39	2
4-6-15				66	45	3

This little mini-study was interesting. The success of Penny's birds proves that an experienced female Eastern Bluebird can successfully hatch her eggs when temperatures dip below freezing during early spring. Did Penny's female keep her eggs viable before incubation began by her frequent trips to the nest box? Did nest box design (smaller entry hole) allow for better insulation from cold? We don't know.

Our little study also shows the tenacity of these birds, trying again until successful if that first clutch doesn't make it as evidenced with Paula's birds.

All early nests don't make it, but sometimes they do! All five of Penny's nestlings fledged on schedule and Paula's birds had successful nestings later in the season. We cannot know what the critical determining factor(s) were which made the difference in the success of the two early bluebird nestings discussed in this article. It is always fascinating to study the behavior of bluebirds, observe the environmental factors which impact their breeding and nesting successes and failures, and share information and observations with others. Don't give up hope if you are faced with an early nesting- bluebirds are resilient and committed to success!