



Eastern Bluebirds at University Ridge Golf Course - 1997 and 2003

By Gary Gaard, Department of Plant Pathology, University of Wisconsin-Madison

Summary. For the same acreage of property the number of fledged bluebirds was four in 1997 and 106 in 2003. A model with the elements of time, nest cavity and environment is used to give explanation for the increase in bluebird production. For successful attraction of nesting bluebirds you must provide the three elements of the model.

Inter-species competition for nest cavities is discussed.

No mealworms were fed, but the end result of diet supplement is discussed.

Introduction

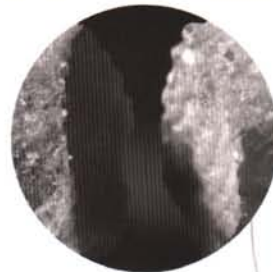
The University of Wisconsin O.J. Noer Turfgrass Research and Education Facility is certified as a wildlife sanctuary.¹ A portion of the certification process was establishment of a bluebird trail on the Noer farm, an adjoining County Park and adjoining University Ridge Golf Course. The three properties are roughly one square mile, but one-half of the area has no bluebird nest boxes because that area is either cropland or not conveniently accessible for monitoring. Records/observations for the three properties are combined as my "Ridge Trail."

After the Noer Facility was certified as a wildlife sanctuary, bluebirds became my weekend hobby. Reference will be made in this article to personal experiences and results from some of my other bluebird trails.

The bluebird trail on University Ridge Golf Course has proven to be an excellent choice for a location to "monitor and increase the production of the Eastern Bluebird and other cavity nesting birds."² The Ridge adjoins the western outskirts of Madison so predation by raccoon and cat is high. Competition for nest boxes with other cavity nesting birds is extremely high - residents in the neighborhood provide many birdhouses and populations of wren, tree swallow and English sparrow are high. Birdseed feeders in the neighborhood favor the English sparrow. Golf course grass mowers scare up insects to provide a daily insect supply for tree swallows. At University Ridge, black flies from the Wisconsin River take blood meals from bluebird nestlings. My first observation of June Nest Box Mortality took place here.³ Golfers and staff are often near bluebird occupied nest boxes, perhaps causing some nest lost when the bluebird hen is kept off her eggs. Golfers and staff see bluebirds and other wildlife and report problems and/or observations. On two occasions we suspected pesticide poisoning but laboratory test for an insecticide (from a nearby hay field) were negative - nestling bluebirds in

both instances died from black fly bites. On one occasion two nest boxes were intentionally knocked over, presumably by a golfer driving a golf cart. As a University employee I have access to libraries, and have asked questions of College of Agricultural and Life Science experts.

Elsewhere in Dane and Iowa County I monitor an additional 100 nest boxes. Some are on four other golf courses, and others are in locations that are less urban. Compared to golf courses, rural areas fledge more bluebirds and have fewer nest failures. Rural area bluebird trails consistently fledge more bluebirds per nest box than golf course bluebird trails. Near Mt Horeb, rural Dane County, single nest boxes in three separate farm lawns each fledged three broods of Eastern Bluebird in 2003.



How can something that lasts so long...work so fast?

With methylene urea and sulfate of ammonia combined in each tiny granule, MESA works immediately to provide a rich green color. And by slowly releasing its nitrogen, MESA lasts considerably longer than sulfur-coated urea without causing unwanted flush growth.

Extended-release MESA greens faster and lasts longer than SCU.

So protect your turf with fast acting, long lasting MESA. Look for Lebanon Pro 25-2-5 with 51% MESA. For more information, see your LebanonTurf Distributor, or call 1-800-233-0628. Or, visit www.LebanonTurf.com.

LebanonTurf

Frank Baden
(563) 332-9288

Monitoring a bluebird trail from a golf cart is fast, one hour at lunch to monitor all the houses on University Ridge. You can easily carry any tools and equipment. Often golfers ask what you're doing so you have opportunities to sell bluebirding and environmental awareness.

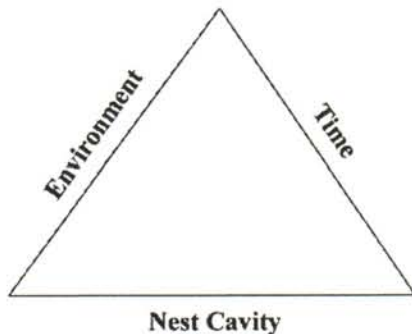
Results

In 1997 a total of four bluebirds fledged in 42 Hill Lake nest boxes placed in late May on my Ridge Trail. Hill Lakes have a large volume, very deep nest cavity. The construction pattern I used had 2"X4" predator guards at the entrance hole, a 1 1/2" round entrance hole and no predator protection pole. Many of the nest boxes were, in retrospect, poorly placed.

In 2003 106 bluebirds fledged on my Ridge Trail from 27 permanently placed small volume, shallow nest cavity Peterson, flyGuard, experimental design, or Gilwood houses. All nest boxes had predator protection poles, large or oval entrance holes and most houses were in locations where bluebirds had fledged in previous years.

A MODEL FOR PRODUCING MORE BLUEBIRDS

Bluebird Triangle



If a bluebird pair is going to nest, they must have all three components of the triangle.

If a bluebird pair is going to nest, they must have all three components of the triangle.

Nest Cavity

Since 1997 seven nest box designs have been used at my Ridge Trail. One Hill Lake remains as a demonstration of bad placement of a nest box that bluebirds do not prefer - for seven years only tree swallows have nested in this box and most nestlings have been victims of June Nest Box Mortality. Currently on the University Ridge Golf Course there are 15 Peterson's, two flyGuard and four experimental (I'm trying to design a house that Easterns will use but tree swallows won't); on the turf research farm there are three Gilwoods, and at the county park there are two flyGuard. Nest boxes have been placed/removed from approximately 100 locations since 1997. University Ridge is the only location that I have Peterson nest boxes. For me, the Peterson is too

bulky, air vents allow the exophilic blackfly to take blood meals from incubating bluebird hens and from nestlings, and the Peterson has more English sparrow nests than nest boxes with restricted space above the entrance hole.

If a pair of bluebirds is in the right ENVIRONMENT at the right TIME, they will build a nest in just about anything including mailboxes, clothesline posts, tin cans, plastic pipes, knot holes, etc. Rather, I look for these features in nest box design: predator proof, easy to monitor and clean, small volume nest cavity, large entrance hole, no vent holes, adult bluebirds can feed/remove fecal sack without entering the nest box, and restricted space above the entrance hole to deter the English sparrow. Bluebirds will, ENVIRONMENT and TIME equal, choose one box over another. ⁴

My opinion is that cavity nesters easily locate all nest cavities in a large territory, perhaps miles. They then nest in the one they most prefer. At one time I would "non-seasonal pair" nest boxes if, for example, a Chickadee claimed a nest box in an area where a pair of bluebirds were hanging around. This is a lot of work, so now I assume the bluebird will find another nest cavity in the vicinity.

Keep a nest box available in the garage. Bluebirds will often nest immediately if the spare nest box from the garage is placed in an area where a pair of bluebirds is observed.

Time

Mature male Eastern Bluebirds return to southern Wisconsin early in March and they're looking for a nest site and a mate. By mid-April most will have selected a nest box and found a mate. This early nesting period is the best time to attract a breeding pair - your nest box should be positioned and cleaned of last year's nests. Black cap chickadees will also build their one nest per year in late April/early May. Both chickadees and bluebirds are fairly successful at defending their respective nest at this time.

Late May and early June tree swallows begin to build their one nest per year and mid-June bluebirds begin their second nest. Wrens also begin to nest late in May, but their nesting season is longer than the tree swallow. Wrens and bluebirds are the season's latest nesters with their final fledging is early September.

The English sparrow is a season-long nester.

Environment

The Eastern bluebird's choice of where to build a nest is something I just don't understand. They will nest in one area consecutive years, but a second area that looks identical to me will host another cavity-nesting species for consecutive years. I think several considerations determine their choice, these being habitat, inter-species competition for nest boxes, and nearby food supply.

The literature describes bluebird habitat as "short

grass prairie." At University Ridge I have had more bluebirds nesting in "woods edge" than "short grass prairie." Greens number one to nine are located in an area of short grass prairie, formerly cropland, and fledged 15 bluebirds in 2003. Greens number eleven to eighteen are located in an area of forest edge, fairways are cut through the woods, and fledged 45 bluebirds in 2003. Woods, with widely spaced trees and brush removed, is an excellent location for a bluebird nest box. Many "woods edge" nest boxes are positioned where squirrels could jump to the box, but I have not lost any bluebird nests to squirrels.

There are eight locations at University Ridge (irrigation pond, driving range, stone creek on #2 fairway, #1 tee, #16 fairway, #15 fairway, #14 green, #10 green) that fledge two broods of Eastern bluebirds each year. My experience is these locations are most of the time but not always, protected from prevailing west wind. The nest box is shaded in the afternoon sunny in the morning. Conversely there are several nest box locations where the bluebirds don't nest, but each year tree swallows do

nest. In 2004 I'm going to remove nest boxes from all golf course locations that have never had a bluebird nest. Non-bluebird-producing nest boxes were removed from both the turf research farm and the county park in 2002; five remaining nest boxes fledged 29 bluebirds in 2003.

Inter-species competition is the most complex part of the environment. With more monitoring experience, I now think it may be the most important factor in determining if bluebirds nest in an area. Usually a cavity nester can keep a nest box once they have nested. However, there is a "pecking order" for Wisconsin cavity nesters. The chickadee is at the bottom, as bluebirds will build a nest on top of a chickadee nest. Next comes the bluebird that can be evicted, sometimes killed, by both the English sparrow and the wren. Chickadees and (first nest) bluebirds nest early in the season and thus avoid some of the nest box competition.

There is a dilemma with the second bluebird nest-competition for a nest box with tree swallows. I have witnessed a group of the social swallow drive a bluebird from a nest box; then the dominant tree swallow claims the site. Some folks still practice season-long house pairing to provide a "box for the bluebird and a box for the tree swallow." These folks persist in seasonal pairing even though Joe O'Halloran of BRAW has proven with data that increasing tree swallow populations decreases bluebird production. I don't view tree swallows and bluebirds as "good buddies" just because they both use the same habitat/nest boxes. Rather, the bird that claims and defends a nest box is going to have descendants. The less aggressive bird, usually the bluebird, has to find another nest cavity or not raise a brood.

These two anecdotal stories demonstrate why there are low numbers of bluebirds where inter-species competition is high. Huegel School in Madison has habitat for one or two bluebird pairs annually. Since 1997 one pair has nested one time and wrens picked holes in the eggs. Tumbledown Golf Course west of Madison has habitat that should fledge 30 bluebirds per year; since year 2000 bluebirds fledged has averaged less than 10 per year. Both locations are surrounded by upscale neighborhoods with many wren houses, bird feeders, season-paired bluebird houses, and English sparrow-inhabited purple martin houses.

Destroying wren/chickadee/tree swallow nests is illegal (with penalties if reported!) and results are only short-term and only local. If the goal is bluebirds only, manage your bluebird trail to produce bluebirds and remove as much as possible nest sites and food supplies for other birds competing for the bluebird nest box.

Nest box spacing should give the competitive advantage to bluebirds. Putting up too many boxes favors competitor cavity nesters. More houses = fewer bluebirds, as populations of the more aggressive wren, tree swallow and English sparrow will be higher. These



Deep Drill Aerification



Drill & Fill Aerification



TURF TIME

AERIFICATION SPECIALIST

TURF TIME *Deep Drill and Deep Drill & Fill*

Midwest Regional Manager
Eli Witt 727-415-3680
Toll Free 1-877-388-8873

species will compete for the nest site at the detriment of the bluebird. My experience is that nest box spacing should be approximately five acres per house. A good measure of a properly spaced nest box is bluebirds fledged per box per year - if the number is less than four, houses are too close together.

I remove nests as soon as the young fledge. A bluebird will build a second nest on top of the first so be careful what you remove. It's rare that a bluebird will use a nest box used by a wren, as twigs in a wren nest are difficult for the bluebird to remove. A bluebird nest is seldom built on top of a tree swallow nest, and I think the reason is the presence of bird mites in swallow nests.

Leave the nest box up all winter? Absolutely! Bluebirds will spend the night until they migrate around Thanksgiving, and other native birds will seek protection from inclement weather through the winter. Bluebirds that have visited nest boxes in the fall theoretically return to the area to nest in the spring.

Another feature of environment is the bluebird's ability to find an insect diet. I suspect they're looking for a food supply near the nest box. They can better defend their nest if they spend less time traveling/searching for food. Bluebirds fed mealworms travel/search less for insect diet. Thus they are more likely to nest, and they are better able to defend their nest. By feeding mealworms you can alter the environment to nests 50 feet apart but with unaltered environment, spacing should be on average 300 yards or more. Native fruit/berry shrubs seem to be easily found by the bluebird.

Recommendations

NEST BOX

Use a design that bluebirds prefer. Data and field experience should verify nest box preference.

Keep a record of nest box production. An obtainable goal is an average fledge of four bluebirds per nest box. Expect an average fledge of more than 1.5 broods of native cavity nester (chickadee, bluebird, wren, and tree swallow) per box per season.

TIME

Maintain your nest box so it is ready for nesting if a pair of bluebirds move to the area. Leave the nest box positioned 365 days per year.

ENVIRONMENT

If the goal is more bluebirds, manage to reduce inter-species competition.

Trial and error is needed to determine if a bluebird nest box is in a habitat that will attract a breeding pair of bluebirds. If for two years no bluebirds nest in the selected location, move the house to a new location.

Place one nest box per several acres.

Feeding mealworms gives the bluebird a competitive advantage over other cavity-nesters.

Open woods are a good location for a bluebird nest box.

Place nest boxes at a location protected from prevailing wind, for example on the east edge of a hill, woods, or fencerow. Locations that receive morning sun, then afternoon shade, are more frequently chosen as nest sites by the Eastern Bluebird.

1. **Cooney, Bob. Birds & Birdies, Wildlife and recreation coexist at the University's golf course. Science Report**, College of Agricultural & Life Sciences, 2000-2001, page 16
2. **Anon. Purpose and Mission statement**, Bluebird Restoration Association Wisconsin (BRAW).
3. **Gaard, Gary. Eliminating Black Fly Feeding on Nestling Bluebirds**, Wisconsin Bluebird, summer 2003, Vol. 18 page 1.
4. **Ibid.** figure 1.

Thank you, Joe O'Halloran for review of this article, for advice, and for suggestions.

Editor's Note: This article appeared in the Vol. 18, No. 4 issue of Wisconsin Bluebird with permission from editor Don Bragg and author Gary Gaard. ♻



Everything To Make Your Course Beautiful

**Turf Seed • Fertilizers • Repair Parts
Golf Course Accessories • Equipment**

LESCO®

800 - 321 - 5325

LESCO is a registered trademark and Grow With Us is a trademark of LESCO Technologies, LLC.