

2005 Fall Newsletter

Welcome to the 2005 fall newsletter.

The AGM is set for Saturday March 18th, 2006 at the Royal Botanical Gardens in Burlington, Ontario. The 2007 meeting is set for Saturday March 17th. That is if we don't get bumped out of that spot by the Orchid Society.

Our feature speaker is Kay McKeever of the Owl Foundation who will discuss her work with barn owls and their history in Ontario.

Fewer EABL's were reported returning to nest box trails in 2005 as numbers continue to decline from a high point in the fall of 2002. Most trail operators reported fewer pairs of EABL's in the summer of 2005 but very high reproductive success. May was colder than average but with none of the extremes in temp which can cause nestling mortality. June, July and August were the hottest on record resulting in good reproductive success and an excellent crop of edible wild berries such as sumac and buck thorn that bluebirds could feed on over the winter. The Hamilton fall bird count on November 6, 2005 recorded 124 Eastern Bluebirds, up from 42 in 2004 and 76 in 2003. Don Wills had his lowest number of pairs (71) in the last eleven years. Numbers can quickly rebound given high winter survival and good reproductive success. Don had his lowest number of fledged young in 1997 and the next year his highest at 721, so things can change very quickly. The overall EABL population in Ontario has increased since 1985 when the last breeding bird atlas finished. The current breeding bird atlas 2000-2005 has found bluebirds in 1235 of 1824 squares, almost 500 more than the previous atlas 1980-1985¹. With an estimate of 2-10 pairs per square this would represent a range of 2470-12350 pairs of bluebirds in Ontario at the end of the breeding season in 2005. Given the weather related declines of the last few years, I would estimate the population to be at the lower end of that range. With warmer weather, both on their wintering grounds and during the breeding season and access to predator proof nestboxes, EABL's should recover to 2002 levels within a few years.

1. 2000-2005 Ontario Breeding Bird Atlas Website

Eastern Bluebird Migration at Thunder Cape Bird Observatory 1991-2005

Eastern Bluebirds migrating through Thunder Cape (located at the tip of Sibley Provincial Park, directly east of Thunder Bay) are migrating from areas to the north and northeast from above Lake Superior.

The Eastern Bluebird No381 birds of North America¹ range map shows no bluebirds in this area.² They breed in clear cuts and forest fire burns above Lake Superior. Some may fly to Pie Island from the tip or may gain altitude and go back up the peninsula to the mainland to continue their south westward migration along the north shore of Lake Superior until they reach Minnesota. The 740 EABL's recorded in 2001 gives us some idea of how many Eastern bluebirds are breeding in boreal forest areas above Lake Superior.

Eastern Bluebird Migration Thunder Cape Bird Observatory - Thunder Bay, Ontario

Fall et ¹			Spring et	
Year	No. Observed	Peak Date-No. Observed	No. Observed	Peak Date-No. Observed
1991	90	Oct 10-27	NR	
1992	50	Oct 21-12	61	May 22-21
1993	11	Oct 16, 24-2	19	Jun 12-12
1994	7	Aug 26-4	36	May 21-9
1995	87	Oct 14-62	14	Jun 8-6
1996	27	Oct 10-8	45	Jun 3-16
1997	266	Oct 6-25	6	Jun 2-3
1998	132	Oct 26-23	43	May 18-26
1999	314	Oct 13-84	30	Jun 8-5
2000	44	Oct 16-10	10	May 11-May 28-3
2001	740	Oct 12-123	16	May 20-5
2002	128	Oct 13-30	22	Jun 9-10
2003	159	Oct 21-38	28	May 24-Jun 6-Jun 7-4
2005	150	Oct 9-33	17	Jun 11-8
Total	2408		257	

1. For a more accurate range map, see any Petersen Field Guide.
2. Go to The Ontario Breeding Bird Atlas Website for a more accurate distribution of Eastern Bluebirds in Ontario.
Et¹ Daily estimated total of birds observed and or banded during the standard count period.

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THE EASTERN BLUEBIRD IN THE OSHAWA-SCUGOG AREA

Article reprinted from Ontario Bird Banding, Vol 6, No. 2 June, 1980, Pages 39.51.

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During the early years of this century the eastern bluebird, *Sialia sialis*, was still present in Southern Ontario in fairly large numbers. Charles W. Nash (1913:76) speaks of seeing "many thousands" passing over Toronto "from west to east" during March. Mrs. Hilda McKay, in a letter to the author, mentions a sighting of "hundreds of bluebirds" in High Park, Toronto, on an autumn afternoon in 1911.

According to local observers, the eastern bluebird population in the Oshawa-Scugog area of Southern Ontario has been declining since the 1920's. By 1967, when the current nesting-box scheme was undertaken, the breeding population had dwindled to a few scattered pairs inhabiting the oak-ridges moraine between Lakes Ontario and Scugog.

The project was initiated by Mr. James M. Richards during the autumn of 1966, and during the winter of 1966-67 ninety-six nest boxes were constructed. These were erected during early March of 1967. In 1968 and again in 1969, the number of boxes was increased and the territory expanded.

The scheme is centered in Durham and Ontario counties, in the northern third of Darlington and East Whitby Townships with some overlap into adjacent sections of the four adjoining townships. Agriculture in the region is not as intensive as in the southern portions of these townships, much of the land being devoted to pasture. In some parts where the soil is sandy, the growing of Scots pines, *Pinus sylvestris*, for Christmas trees has replaced subsistence farming.

Nest boxes are placed on fence posts in open, short grass pasture, or along the railway right-of-way which bisects the area. Since eastern bluebirds are primarily ground feeders, a heavy growth of grass such as is found in hay fields is detrimental. During spells of cold wet weather, nestlings in boxes in such sites are the first to succumb to starvation. Placement within one hundred yards of woods, especially plantations of evergreens, encourages predation, and competition from certain mammal and bird species. Bluebirds will use boxes as close together as one hundred feet, if competition for nest sites is keen. More often, however, one aggressive male will defend two boxes, and he and his mate will raise a first brood in one box and a second in the other.

Boxes are constructed of waterproof plywood with 5/8" being used for the bottom, back and front and 3/8" for the sides and roof. Two nails at the top hinge the front which is secured in place by two removable nails at the bottom. This allows the front to swing out for easy access for checking and cleaning. A deep box is preferable to reduce destruction from predators which can easily reach into an unprotected shallow box. The bottom of the 1-1/2" diameter entrance hole is placed 8-1/2" from the floor of the box in the 12" front.

Destruction and loss of nest boxes is due primarily to human vandalism. Those boxes placed along the railway tracks seem particularly susceptible to destruction or damage by thoughtless "hunters". A few boxes have been stolen and an equal number simply torn or smashed apart. Groundhogs, *Marmota monax*, seem to have a liking for some ingredient in either the paint or the plywood glue, and a number of boxes have been completely eaten by these animals. Red squirrels, *Tamiasciurus hudsonicus* and less frequently, flying squirrels, *Glaucomys volans*, enlarge the entrance and damage the interior by chewing.

During the first three years of operation no attempts were made to protect the nest boxes from predators other than to select boxes. Several species contribute to this, but increasing evidence points to cats as the main culprits. Definite proof in several cases was provided by paw prints on the front of the box, and hair about the entrance hole. Almost every box affected in this way has claw marks near ground level on the supporting post characteristic of a cat "sharpening" its claws in preparation for climbing. Racoons, *Procyon lotor*, may be a problem but no evidence definitely incriminating them has been found. In one instance a crow, *Corvus brachyrhynchos*, was seen reaching into a shallow nest box apparently in an attempt to remove the small nestlings which were inside.

Some species which compete with bluebirds for possession of nest boxes also destroy bluebird eggs or young. Squirrels, and occasionally deer mice, *Peromyscus maniculatus*, destroy clutches of eggs in the course of preparing the box for their own use. House wrens, *Troglodytes aedon*, will puncture, remove or cover clutches of eggs, but I have never known them to interfere with nestlings. In two instances a male house sparrow, *Passer domesticus* was found at a box containing large nestling bluebirds. In one case all five young were dead, while in the second box three of the five young had died. In both cases the bodies of the nestlings, particularly about the head and back, were covered with bruises indicating internal bleeding. The two live young were also bruised, but less severely. I have seen no other dead or live nestlings bruised in this manner, and I feel quite certain that the male house sparrow was responsible. Tree swallows, *Iridoprocne bicolor*, use the nest boxes but only if they are not occupied at the time by bluebirds.

The only parasite which has any obvious marked effect on the nestlings is a fly, *Apaulina sialia*. The bloodsucking larvae of this insect attach themselves to the legs or the least susceptible nest sites available. Increased losses from predators during the three-year period indicate that some manner of protecting the box will have to be employed, or the boxes will become a hazard rather than a benefit to bluebirds. During 1970 some boxes were placed on steel towers along hydro-electric power lines. No destruction due to predators occurred in these boxes compared with nearly fifty per cent losses in the unprotected boxes.

Two types of predation occur, one in which the predator enters the box and destroys its contents, and a second in which the predator reaches in and destroys or disrupts the contents, often killing the incubating or brooding female. Squirrels mainly red squirrels, are responsible for the first type. Far more common is destruction by larger predators which reach into the wings of the nestlings. If present in large enough numbers, especially on a small brood, and when combined with other factors such as cold, wet weather, they serve to weaken the nestlings enough to contribute to the death of some of all of them. As many as fifty of the brown cylindrical pupal cases of this parasite may be found at the base of a nest after a brood has fledged. Few broods are completely free from infestation.

Only one egg of brown-headed cowbird, *Molothrus ater*, has ever been found in our nestboxes. During 1969 an egg with a partially developed viable embryo was found in a nest box with five young bluebirds which were almost ready to fledge. It apparently must have been laid after the nestlings had hatched, and developed because of their body heat.

In this area the bluebirds arrive on their nesting territories in late March and early April. Nests of grasses and/or pine needles, *Pinus strobus*, and infrequently *Pinus sylvestris*, are under construction by mid-April in most years. From three to six eggs are laid (See Table I for details) and incubation does not begin until a full clutch has been reached. Both nest building and incubation seem to be carried out exclusively by the female. An unmated male will place a few pieces of grass in a nest box when he claims it, and then sing until a female is attracted. On

two occasions I have found a male bluebird in a nest box containing eggs, but in neither case was he incubating the eggs when the box was opened.

Table I

Number of clutches with 0,1,2,3,4,5,6 or an unknown number (?) of eggs laid, young hatched and young fledged				
	Number	1967	1968	1969
Eggs Laid	0	0	3	6
	1	0	1	0
	2	0	3	0
	3	1	7	7
	4	5	24	33
	5	13	24	55
	6	1	1	8
	?	4	43	24
Young Hatched	0	3	31	38
	1	0	1	3
	2	0	4	8
	3	3	12	16
	4	7	23	25
	5	7	11	25
	6	0	1	4
	?	4	23	14
Young Fledged	0	3	31	38
	1	0	1	3
	2	0	4	8
	3	4	12	16
	4	5	23	25
	5	6	11	25
	6	0	1	4
	?	6	23	14

Eggs are normally blue in colour, somewhat paler than robin's egg blue, but clutches of white or near-white eggs occur regularly (see Table II). Since incubation begins only after the last egg is laid, the young usually all emerge within a twenty-four hour time period. Both adults help to feed the young. Caterpillars, grasshoppers and small moths make up the bulk of their diet. When the young leave the nest they are able to fly quite well. For the first few days the fledglings are cared for by both parents. The male then begins to devote part of his time to defending the nest site to be used for raising a second brood, whether it be the one used for the first brood, or a different one. Within two weeks the young are left in the care of the male while the female begins construction of a nest for the second brood. The number of eggs laid in this nest is, on the average, less than the number laid in the first clutch, but clutches of six eggs do occur. During 1970 at least one female raised six young in a first brood and laid a second clutch of six eggs in the same nest box (see Table III for details of numbers of eggs laid, young hatched, and young fledged). Two broods is usually the maximum number raised

by one female during a single season. However, during 1969 two broods were fledged from one nest box and a third clutch of eggs laid, but it is not known if one female was responsible for all three nestings. The first of these three nestings was the earliest of all 1969 nestings, being started about April 15.

Table II

Egg Colour of Bluebirds			
	1967	1968	1969
Total # of broods where egg colour known	31	68	78
# of clutches with blue eggs	30	65	78
% of clutches with blue eggs	96.8	95.6	91.0
# of clutches with near-white eggs	0	0	2
% of clutches with near-white eggs	0.0	0.0	2.3
# of clutches with white eggs	1	3	6
% of clutches with white eggs	3.2	4.4	6.7

Table III

Nesting Success of Bluebirds	1967	1968	1969
Available nest boxes	90	240	330
Total # of broods	24	106	133
# of broods per available nest box	0.27	0.44	0.40
Total # of eggs laid	113	426	587
Average # of eggs laid per brood	4.70	3.71	4.41
% of eggs hatched	71.0	77.2	82.0
Average # of eggs hatched per brood	3.34	3.10	3.62
Total # of young fledged	79	285	370
Average # of birds fledged per brood	3.29	2.69	2.78
% of eggs fledged	70.0	66.9	63.2

Table III also shows the details of the number of boxes available and the nesting success each year. A late cold spell during May of 1967 and again in 1968 caused the destruction of a number of clutches of eggs. Since the female does not incubate partial clutches, the

unprotected eggs often freeze and crack during severe cold spells. No losses due to this cause occurred during 1969 or 1970. The high fledging success rate for those eggs which did hatch during 1967 indicates a very low level of predation. As individual predators began to recognize the nest boxes as potential food sources, the losses due to this cause increased (Graph I) while the nesting success decreased (Graph II). Data from the first brood nestings in 1970 is included in these graphs to show the continuation of this trend. The key factor, fledging success, shows a more or less constant decline. For other causes of nesting failure see Table IV.

Table IV

Suspected Causes of Nesting Failure	1967	1968	1969
Cold weather	3	5	0
Predation: number	0	18	25
% of total	0	53	81
Human vandalism	0	1	2
Lid of nest box off	0	2	1
Eggs infertile	1	0	0
Competitors	0	5	1
Unknown	1	3	7
Totals	5	34	36
% of eggs fledged	70.0	66.9	63.2

SUMMARY AND CONCLUSIONS

From the data gathered in this project and from similar experiences in two other projects, there are a number of conclusions to be drawn which might be of interest to others involved in bluebird nesting box projects in Southern Ontario:

1. It appears that a high proportion of broods are fledged successfully during the first year of operation of such a project, but predation increases rapidly during subsequent years and nesting success decreases accordingly. Expansion of the project during the second and third years of operation tends to make this fact less obvious since many new boxes in new locations have not yet been discovered by predators.
2. Deep nest boxes are preferable to shallow ones because they tend to reduce predation, but they are only effective against the "reaching" type 3. of predator and their benefit is nullified when the nesting bird builds a deep nest bringing the top of the nest close to the level of the entrance.
4. Since building a nest box which is completely predator proof seems an impossibility, the boxes in any successful nesting box project will have to be made inaccessible to predators by the use of some type of metal protector or support.

LITERATURE CITED

Nash, Charles W. 1913. Birds of Ontario in Relation To Agriculture. Ontario Department of Agriculture Bulletin #218.

Peterson, Randolph L. 1966. The Mammals of Eastern Canada. Oxford University Press.

Editor's Discussion

They faced many of the same problems bluebirders face today. Losses from predators (mainly raccoons) increased during this study as they identified nestboxes as possible food sources. Overall, this was a very successful project that fledged many bluebirds, at a time when bluebirds elsewhere in the province were on the decline. It demonstrates the impact that one or two dedicated bluebirders can have towards increasing a population.

The idea behind bluebirding is to provide a safe, predator-proof nestbox for Eastern Bluebirds to fledge more young than in natural cavities. A thorough application of grease on a t-bar or metal pole has proven to be almost 100% effective in keeping raccoons from climbing them. A special stove pipe guard can also be used to stop climbing predators. Bluebird trails with boxes located on fence posts can have a negative effect on bluebird populations. Raccoons, after finding food in a box (a female bluebird or young) will visit other boxes in the area and predate those as well. It is up to you to stop this from happening. Since natural cavities are located on a random basis only that one nest would be lost. If you are not able to protect your boxes, you should consider removing them in order to help the bluebird population.

Eastern Bluebird Banding in Ontario 1965 - 1971						
1965	1966	1967	1968	1969	1970	1971
123	72	9	40	348	261	169

Most of the bluebirds banded in 1969-1971 were from Dennis Barry's and Jim Richard's bluebird trail located between Lake Scugog and Lake Ontario.