

Ontario Eastern Bluebird Society Nestbox Survey - 2000

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Since 1987, the Ontario Eastern Bluebird Society (OEBS) has conducted a survey of the results from nestbox trails operated throughout Ontario. This report summarizes the data obtained from the 2000 survey.

Methods

A survey was distributed to all known operators of EABL nestbox trails in Ontario and to all members of the Ontario Eastern Bluebird Society. The forms requested standard information regarding the operation and nesting success of the nestboxes. The data reported was incorporated directly into the attached summary table (Table 9) which is arranged on a county basis.

Because not every form was complete, it was necessary to make some estimates for the missing data based on the information that was supplied. For example, if a respondent indicated six successful nestings, but made no estimate of total fledged young, an estimate of (3.99×6) or 24 fledged young was used. On the other hand, no estimates were made for the other categories if they were not reported on the survey.

The recorded egg total of 4438 is taken from the 2000 survey sheets. In 2000, 69.58% (Table 6) of all eggs laid produced fledged bluebirds. If we use this calculation, we can estimate the egg total based on the number of fledged young. 5078 fledged young divided by .6958 (69.58%) gives us an estimated egg total in 2000 of 7298 eggs.

Results

A total of 5078 EABL's were recorded fledging from the 2000 nestbox surveys. Eighty reports were received for 2000. The number of monitored nestboxes decreased to 4257 from the 1999 total of 8246. (Table 4)

The lower number of monitored nestboxes is explained by some members who were unable to monitor in 2000 and, some who are deceased like Leo Smith. In these cases, estimates of fledged young were made after consulting with trail monitors in those areas.

Another large trail was omitted from the survey because no information was included with the results. Our technical committee decided that in future surveys, trails fledging over 200 EABL's must state the number of boxes, location of boxes and individuals who are involved as a minimum to be included in the survey results.

In order to arrive at a figure that more accurately represents EABL breeding success in 2000, I examined the 40 surveys that recorded both numbers of EABL pairs and fledged young. A total of 639 EABL pairs fledged 3088 young or 4.83 young per pair in 2000. This figure was used to calculate the number of EABL pairs, if not recorded on survey sheets.

The 2000 Nestbox Survey represents a total of 1013 EABL pairs in Ontario. If EABL pair information was not recorded on survey forms, the figure was estimated using an average of 4.83 young per EABL pair per nesting season. In calculating the number of pairs of EABL's, the number of fledged young reported was divided by a factor of 4.83 to establish the estimate of EABL pairs. This calculation is made only if the respondent did not include the number of EABL pairs on the survey form.

Nine hundred and sixty-three EABL's and one thousand and ninety tree swallows were reported banded during the 2000 season. Banding was carried out by David Lamble, Bill Read, Bob Hubert, Dave Raynor, Teri Groh, and Martin Wernart. (Table 1)

Table 1 Banding Totals

Name	EABL	TRES
Bob Hubert	215	
David Lamble	87	850
Dave Raynor	399	145
Bill Read	253	52
T. Groh, M. Wernart	9	43
Totals	963	1090

Nestbox Survey - Other Species

Occupation (number of nestings only - not fledged young) of nestboxes by the usual other bird species occurred with 215 House Wrens, 1745 Tree Swallows, 32 Blackcapped Chickadees and 15 House Sparrows.

Natural Cavity Nestings

A total of 23 pairs of eastern bluebirds were reported nesting in natural cavities. Natural cavity nestings tend to be under reported because bluebirders spend most of their time tending to their nestboxes, and are not looking in areas where EABL's may be nesting in natural cavities.

Fledged Young Calculation Per EABL Pair for 2000 (Table 2)

In 2000, 639 pairs fledged 3088 young or 4.83 fledged young per pair. This calculation is made using the forty 2000 surveys that included both fledged young and the number of Eastern Bluebird pairs. It does not represent the total fledged young for 2000.

This figure is the third highest total calculated since the survey began in 1987. It is a continuation of a trend that started in 1995. With all averages above four (4). From 1990 to 1994, the fledged young per pair average was only 3.92 (13,567 fledged young divided by 3457 pairs). From 1995 to 2000, the fledged young per pair average was 4.79 (16,778 fledged young divided by 3497 pairs). This represents a significant increase in the number of EABL's fledged and may partly be due to warmer than average weather during the breeding season during those years.

Table 2 Fledged Young Per Pair per Breeding Season - 1989-2000

Year	EABL pairs	Fledged Young	Fledged Young per pair
1989	894	3804	4.26
1990	793	3081	3.81
1991	794	3345	4.21
1992	801	3121	3.90
1993	553	2076	3.75
1994	516	1944	3.7
1995	510	2328	4.56
1996	519	2365	4.56
1997	396	1607	4.06
1998	651	3489	5.36
1999	782	3901	4.99
2000	639	3088	4.83
Total	7848	34,149	4.35

Table 3 Percentage of Attempted EABL Nestings which were Unsuccessful
As reported on OEBS Surveys from 1988-2000

Year	Attempted Nestings	Successful	Unsuccessful	%
1988	2112	1608	504	23.86
1989	2321	1985	336	14.48
1990	2548	1977	571	22.41
1991	2393	1956	473	18.26
1992	2065	1574	491	23.77
1993	1140	805	335	29.28
1994	1107	864	243	21.95
1995	1250	1051	199	15.95
1996	1241	1080	161	12.97
1997	999	813	186	18.62
1998	1416	1216	200	14.12
1999	1320	1028	292	22.12
2000	1234	969	265	21.47

Table 4 Fledged Young Per Monitored Nestbox As Reported on OEBS Surveys 1987 - 2000

Year	Boxes Monitored	# of Surveys	Fledged Young	EABL's Fledged per monitored nestbox
1987	* 7503	101	4910	0.65
1988	8809	153	6352	0.72
1989	11426	175	8260	0.72
1990	9209	148	7307	0.79
1991	8784	134	8138	0.93
1992	7605	133	5770	0.76
1993	6561	119	3677	0.56
1994	4999	102	3681	0.74
1995	5653	89	4980	0.88
1996	5718	92	4611	0.81
1997	5298	79	4434	0.84
1998	7329	83	6515	0.89
1999	8246	84	7127	0.86
2000	4257	80	5078	1.19

* Bluebird Nest-Box Trails in Ontario and their Usefulness for Bio-effects Monitoring of Agricultural Chemicals. Technical Report Series No. 202, Ontario Region 1994. Canadian Wildlife Service, Martin K. McNicholl, William F. Read, D.V. (Chip) Weseloh

Table 5 Summary of the number one presumed cause of lost eggs or Nestlings as recorded on 44-2000 Surveys

Cause	No. Occurrences	%
Weather	25	56.8
House Sparrows	6	13.6
House Wrens	5	11.4
Raccoons	4	9.1
Blowflies	1	2.3
Tree Swallows	1	2.3
Humans	1	2.3
Abandonment or death of female	1	2.3
Total	44	100.1

Weather continues to be the number one presumed cause of lost eggs or nestlings with house sparrows second and house wrens third. There is very little that can be done to stop weather related nestling mortality, but with proper monitoring and predator control, nestling losses caused by raccoons and house sparrows can be almost completely eliminated.

Table 6 Eggs to fledged young calculation 1999

Year	# of Surveys	Eggs Layed	Fledged Young	% Fledged Young to eggs
1999	50	5426	3889	71.67%
2000	45	4398	3060	69.58%

This calculation is made using all the 2000 surveys that included egg totals and total fledged young. It tells us that 69.58% of eggs layed in 2000 produced fledged young. It does not represent the total fledged young for 2000. It is an indicator of how successful the bluebird season was.

Summary:

Another very successful year for Eastern Bluebirds. The fledged young per pair was the third highest ever recorded at 4.83. There were no reports of bluebirds found dead in nestboxes over the winter of 1999-2000. Don Wills from Caledonia, found evidence of roosting by EABL" in 39 of his nestboxes. The winter was not that cold enabling most overwintering EABL's to survive and return to breed in 2000. The spring and summer were extremely wet. Environment Canada reported that this past summer was the third wettest on record. Temperatures were cooler than the last few years, but were about average or slightly above average (based on long term averages). The temperatures over the spring and summer seemed cooler because we have experienced extremely hot summer weather the last four or five years. Most bluebirders have reported fewer fledged young but there were exceptions. Norm Shantz who has had an EABL trail for over 40 years reported his best year ever with 123 fledged young.

Overall, breeding success was high despite the wet weather.

Temp - Rainfall - Spring and Summer 2000

Month	Mean Temp.	Normal *	Rainfall	
			Actual	Normal *
May 2000	13.8 °C	12.5 °C	145.3 mm	76.3 mm
June 2000	17.8 °C	17.0 °C	150 mm	79.5 mm
July 2000	18.9 °C	19.9 °C	98 mm	90.4 mm
August 2000	18.5 °C	18.7 °C	53 mm	93.3 mm

**Normal based on long term 30 year average. Information gathered at Waterloo-Wellington Regional airport by Environment Canada.*

Temperatures in May and June were actually above the long term average but rainfall in both months was almost double the normal value. This caused problems for bluebirds by decreasing insect activity and making it more difficult to find them especially during periods of extended rainfall. The month of May had three periods of very cold weather which were preceded by Heavy precipitation - May 14, 15, 16, 19 and 20 and May 25 and 26. This resulted in unusually high nestling mortality. Don Wills lost 61 young starting around May 23. The 23rd day of May received 15.2 mm of rain and 4.6 mm on the 24th.

On the 25th and 26th, the temperature dropped to a mean of 11.2° C and 11.4 °C. Most first brood young were lost during this period. Second broods and later nestings were not as successful with some reports of EABL's giving up on later nestings.

Table 7 Fledged young per successful nesting

Year	No. of Surveys	Successful Nestings	Fledged Young	Fledged young per successful nesting
1999	57	1582	5890	3.72
2000	47	870	3474	3.99

Table 8 Fledged young per attempted nesting

Year	No. of Surveys	No. of attempted nestings Successful and Unsuccessful	No. of Young Fledged	Fledged young per attempted nesting
1999	55	1337	4000	2.99
2000	47	1126	3474	3.08

Data used for this calculation was taken from surveys that included both successful and unsuccessful nestings and total fledged young. It does not represent the total fledged young for 2000. A total of 3.08 young fledged from all attempted nestings. Using only those attempts that were successful, a figure of 3.99 fledged young per nesting was calculated.

Attempted Nestings per Pair

We know that 1013 pairs fledged 5078 young or 4.83 fledged young per pair.

If we divide 5078 by 3.08 (young fledged per attempted nesting), we get 1649 attempted nestings. If we divide this by the number of pairs (1013), we get 1.63 attempted nestings per pair. In 1999 there were 1.67 attempted nestings per pair.

Acknowledgments:

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Table 9. Summary of Responses for Eastern Bluebird nestbox questionnaire for Ontario - 2000

County or District	Survey	Boxes Monitored	Boxes on Trail	Boxes Used Successfully	Nestings Successful	Young Fledged	Unsucc. Nestings	Eggs Blue	Eggs White	Nesting Natural Cavities	EABL Pairs Rep.	House Wren	TRES Nestings Succ. / Unsucc.	Black capped Chickadee	House Sparrow	Banded EABL	Banded TRES	
Brant	3	558	558	173	212	824	47	1060	23	7	162	44	188	15	6	253	52	
Bruce	4	671	671	6	9	545	2	42			117	74	176	5	11			
Dufferin	8	281	806	82	214	838	29	210			99	6	83	27		399	145	
Durham	3	63	63	14	17	59	10	106	4		18	4	46	14	3	1		
Elgin	2	145	145		255						53					215		
Essex	1	244	244	40	45	160	16	272	16	3	43	16	89	17				
Grey	3	172	175	32	36	158	11	195		2	29		84	14				
Haldimand-Norfolk	12	93	93	19	25	93	8	72	5	1	22	6	27	1				
Halton	2	61	61	4	6	25	0	29			4	7	12	1		9	43	
Hamilton-Wentworth	4	209	209	34	38	119	9	179			29	2	46	23				
Hastings	2	52	52	10	6	28	3	24			5		26					
Huron	1	25	25	7	9	31	1	39			6	3	12	2				
Lambton	2	97	97	15	11	52	4	67			11							
Lanark						110					23							
Lincoln	2	50	50	21	22	97	17	162	4	1	25	2	25	5	1	3		
Manitoulin	2	64	64	7	7	31		33			7		24	3	1			
Middlesex	2	52	54	4	5	20	4	38		1	5	4	20	5				
Muskoka	1	77	150	17	19	23	2				16		36	9	2			
Niagara	2	37	79	22	36	160	5	188			21	3	31	1				
Northumberland	3	142	345	21	28	255	12	439	5	2	55	6	17	9.6				
Ottawa-Carleton	2	244	249	55	68	272	20	396			59	29	242		6			
Oxford	2	60	160			225					47							
Peel	1	2	7	1	2	9		9			1		4	2				
Perth	1	40	40	6	10	40	1	50		1	6		32	3				
Peterborough	2	1	17	1	32	128	7	10		1	27							
Renfrew	2	33	33	4	5	24	1	24	6		5		9	1				
Simcoe	4	101	116	8	7	61	6	41			18	5	16	3	2			
Victoria	2	147	147	45	48	221	24	317	9		46	2	24	11				
Waterloo	1	70	70	22	33	132	12	205	4		24	2						
Wellington	3	466	502	18	19	84	14	155		4	31	2	181	141	2	87	850	
Totals	80	4257	5282	688	969	5078	265	4362	76	23	1014	215	1450	309	32	15	963	1090

Because not every survey was complete, it was necessary to make some estimates for the missing data based on the information that was supplied. For example, if a respondent indicated six successful nestings, but made no estimate of the total fledged young, an estimate of 3.99X6 or 24fledged young was used. On the other hand, no estimates were made for the other categories if they were not reported on the survey. The recorded egg total of 4438 is taken from the 2000 survey sheets. In 2000 69.58% of all eggs laid produced fledged bluebirds. If we use this calculation, we could estimate the egg total based on the number of fledged young. 5078 fledged young divided by .6958 (69.58%) gives us an estimated egg total for 2000 of 7298 eggs.