

Figure 1. The Blue Jay is an abundant autumn migrant through southern Ontario, especially along Lakes Ontario and Erie.

*Photo: Geoff Carpentier*



# THE AUTUMN BLUE JAY MIGRATION IN ONTARIO

*Geoffrey Carpentier*

Although there are many references to the autumn passage of Blue Jays (*Cyanocitta cristata*) through Ontario in the literature (Tozer and Richards 1974, Speirs 1985, Sibley 2001), the migration is not well documented from a quantitative perspective. This paper will summarize the key migratory dates, numbers of birds involved and highest reported totals for selected locations throughout Ontario.

Additionally, information will be provided as to why the jays leave and the routes they follow.

The fall passage of Blue Jays through Ontario has long been observed, with reports at least as early as 1906 at Pelee (Bent 1964). Often huge numbers of birds migrate out of the province annually, during a few weeks in September and October.

**Table 1. Association Between Mast Crop and Blue Jay Numbers**

Fall migration	Mast Crop			Predicted Flight	Blue Jay #'s at Holiday Beach
	Red Oak	Beaked Hazel	Am. Beech		
2006	Poor	Excellent	Good to excellent	Small	107,311+
2007	Fair to good	Not reported	Very poor (no nuts)	Strong	446,402+
2008	Good	Not reported	Fair	Small to average	144,467+
2009	Poor	Poor	Poor	Strong	934,592+
2010	Spotty	Not reported	Poor to none	Average	186,846+

*Table 1 shows that there is a direct association between the availability of mast from oak, beech, hazelnut and Blue Jay fall flight numbers.*

The Blue Jay (Figure 1) is one of 11 species of North American jays, and is a familiar part of Ontario's avifauna. It ranges across much of southcentral Canada, but is generally absent from the territories, and its presence in British Columbia is patchy. It is considered a year round resident throughout much of the eastern and central USA, east of the Rockies and south to the Gulf of Mexico. In Ontario, its range includes all of the central and southern parts of the province, and extends north and west from Sudbury to Thunder Bay. It is uncommon to southern Kenora District and the Missinaibi River, Cochrane District (Cadman *et al.* 2007). Its North American population is reported to be about 22,000,000, and has remained stable over the past 40 years (BirdLife International, 2010). Except in the extreme southern parts of its North American range, about 20% of the population is migratory (Hoyo *et al.* 2009).

In Ontario, the Blue Jay is closely associated with forests having high proportions of beech, oak and beaked hazel, so when crops of acorns, beechnuts and hazelnuts are poor, jays migrate out of the province in greater numbers. Ron Pittaway forecasts the flight strength of the Blue Jay migration in his annual Winter Finch Forecasts. Table 1 shows that there is a direct association between the availability of mast from oak, beech, hazelnut and Blue Jay fall flight numbers.

The migratory path of Blue Jays in autumn follows the edges of major waterways (Hoyo *et al.* 2009), with the north shores of lakes Ontario and Erie representing major pathways (m.ob.). In Ontario, the general flight direction is mostly from an E/NE to a W/SW direction (m.ob.), from treetop level to 300 meters (Hoyo *et al.* 2009). Birds travel in loose strings involving a few to hundreds of birds. In the spring, smaller less obvious movements occur, but these are not as closely linked to major waterways, so are not as evident (Hoyo *et al.* 2009).

There are many records of large movements of the Blue Jay through Ontario in the fall, but most are not adequately

quantified, and where records do exist, often the reporting is inconsistent or sporadic, primarily due to a lack of dedicated counters. At Holiday Beach Migration Observatory (HBMO) in Essex County, Long Point Bird Observatory (Norfolk County) and Prince Edward Point Bird Observatory (Prince Edward County) numerous records have been documented over the years, with efforts made to report numbers seen. It is, however, seldom reported how the numbers were generated, or how confident the observers were in

the number reported. It is presumed that when higher numbers are published, the observers are doing block or time counts to estimate the number of birds going by. Often counts of jays are made when other priorities are set aside. For example, at the hawk counts along the shores of Lakes Erie and Ontario, jays are counted when the hawks are not overwhelming the counters. Counts made at Cranberry Marsh in the autumn of 2010 were actual numbers of birds seen, with efforts made to count every bird as it passed.

**Table 2. Summary Highest Counts<sup>1</sup> by Site > 2500 jays/day**

Date	# of Jays (Year – Location)			
	CMHW <sup>2</sup>	P. Ed. Pt. <sup>3</sup>	Hawk Cliff	Other
2 September				3,000 (DNS4 – Pelee N.P.) <sup>5</sup>
12 September				4,000 (DNS – Pelee N.P.)
13 September		4,000 (2009)		
16 September		3,000 (2003); <4,000 (16-22 Sept. 2005)		10,000 (DNS – Pelee N.P.)
17 September		5,000 (2009)	4,000+ (2009)	
18 September	5,043 (2005)	3,700 (1977); 3,000 (2003); 4,000 (avg. daily count 18-24 Sept 2009); 3,000 (2009)		17,000 (1999 – Cobourg)
19 September				20,000 (1968 – Pickering); 13,000 (1999 – TW6); 5,000 (DNS – Pelee N.P.)
20 September		9,000 (1975); 2,500 (2003); 4,000 (2009)	3,000 -50,000 (2007)	6,500 (1981 – Rondeau P.P.); 2,400-3,500 (2007 – TI <sup>7</sup> )
21 September		2,500 (1975); 4,000 (2005)		3,710 (1999 – HP <sup>8</sup> )
22 September	2,936 (2010)	2,500 (2001)		
23 September			6,000+ (2010)	
24 September		3,500 (2003); 3,000 (2005); 5,000 (avg. daily count 24-30 Sept. 2010)	20,000 (2009)	7,200 (1985 – LPBO <sup>9</sup> ); 4,000 (2009 – TI)

Date	# of Jays (Year – Location)			
	CMHW <sup>2</sup>	P. Ed. Pt. <sup>3</sup>	Hawk Cliff	Other
25 September		2,500 (2005); 3,000 (2007)		2,000-4,000 (2009 – TI)
26 September	2,810 (2010)	2-5,000/daily 26 Sept –02 Oct /08		3564 (1997 – HP)
27 September		8,000 (2008)		3,000 (1977 – Rondeau P.P.); 15,000 (1981 – Rondeau P.P.); 10,000 (1985 – Toronto – reverse migration); 5,800 (1985 – Pickering – reverse migration); 2,500-4,000 (2005 – TI)
28 September	5,000 (2001); 4,000 (2003)	3,500 (1980);	5,000 (2008)	5,000 (DNS – Pelee N.P.)
29 September	5,545 (2007); 3,747 (2010)	2,500 (2008)	2,771 (1997); 30,000 (2010)	4,000 (1952 –Port Stanley); 2,500 (2006 – TI)
30 September		2,900 (2005); 5,000 (2008)		3,000 (1993 – HP); 2,771 (1997 – HP)
2 October		6,000 (2003)		3,011 (1961 – LP <sup>10</sup> )
3 October				2,448 (1998 – HP); 3,000- 3,800 (2008 – TI); 3,000 (DNS – Pelee N.P.)
4 October				10,000 (1962 – Rondeau P.P.); 4,500-4,600 – (2008 -TI)
5 October		2,500 (2002)		2,500 (1979 LPBO)
6 October			3,000 (2010)	
7 October				3,000 (1979 – Rondeau P.P.)
5 October		2,500 (2002)		2,500 (1979 LPBO)
6 October			3,000 (2010)	
7 October				3,000 (1979 – Rondeau P.P.)

<sup>1</sup> Totals for HBMO ([www.hbmo.org](http://www.hbmo.org)) are excluded from this table as there were too many records of >2500 birds in their database. However, Table 3 provides details for the highest daily total and dates for HBMO sightings for each of the years 2001-2010.

<sup>2</sup> Cranberry Marsh Hawk Watch, Durham R.M.

<sup>3</sup> Prince Edward Point Observatory

<sup>4</sup> Date not specified

<sup>5</sup> Data presented here courtesy of Stirrett (1973)

<sup>6</sup> Thickson's Woods, Whitby, Durham R.M.

<sup>7</sup> Toronto Islands

<sup>8</sup> High Park Hawk Watch

<sup>9</sup> Long Point Bird Observatory/Bird Studies Canada

<sup>10</sup> Lorne Park, Burlington

*To offer an indication of the magnitude of the flight, Table 2 illustrates the reported number of times that more than 2,500 jays were seen at various locations throughout Ontario in a single day.*

The two hawk monitoring stations, located along the Lake Erie shore (Hawk Cliff and HBMO), annually record the passage of tens or hundreds of thousands of Blue Jays. Based on data on the HBMO website, their 28-year average is 292,126 jays/year. This number is somewhat lower than the actual number of jays that pass the observatory because on some days, during the peak of the migration, no counts were conducted, no jays were reported or only a general reference was made to their passing. Interestingly, the numbers of jays observed at peninsulas along the Lake Erie shore are much lower than one might expect, due their proximity to these stations. The highest daily numbers reported at Long Point, Point Pelee and Rondeau were 7,200, 10,000 and 15,000, respectively. Typically, most records in these areas were for 100s or low 1,000s of birds. This may be explained by the presumption that the majority of the jays are closely following the east-west Lake Erie shoreline and seldom stray too far from this path, avoiding long southerly flights to follow the jutting shore at Long Point, Rondeau and Point Pelee. Niagara Region (K. Roy, pers. com.), Hamilton (Curry 2006), Kingston (Weir 1989) and the Sarnia River valley (pers. ob.) frequently experience modest, but never large, movements of birds in the fall.

Since HBMO maintains the most complete and consistent record of the autumn migration of Blue Jays in the province, I have relied on their data to demonstrate trends and indications of the magnitude of the fall flight. Table 3 identifies the highest daily total for each of the years 2001-2010 at HBMO.

**Table 3. Holiday Beach Migration Observatory Highest Daily Count 2001-2010**

Year	Date	# of Jays
2001	28 September	264,410
2002	6 October	15,000 <sup>1</sup>
2003	28 September	79,863
2004	10 October	74,410
2005	4 October	34,040
2006	29 September	55,659
2007	28 September	54,270
2008	4 October	68-74,000
2009	1 October	158,300
2010	9 October	41,000

<sup>1</sup> Chartier (2005) reported on the impacts of West Nile Disease in Corvids in Ontario. This highest daily total for 2002, compared with other years, is indicative of how greatly the jays were impacted in that year.

*In order to determine the peak fall migratory dates for the jays, Table 4 reports on daily flights during the period 2006 to 2010 at the HBMO.*

**Table 4. Holiday Beach Migration Observatory – Sightings Summary 2006-2010**

Date	# of Jays Reported <sup>1</sup>				
	2006	2007	2008	2009	2010
1 September	N/R	N/R	observed	No count	N/R
2 September	N/R	N/R	N/R	N/R	4,920
3-11 September	N/R to a few	N/R	0-3	N/R	0-1
12 September	N/R	N/R	N/R	900	N/R
13 September	N/R	observed	N/R	2,015+	N/R
14 September	N/R	N/R	N/R	1,775	N/R
15 September	N/R	342	N/R	2,850+	N/R
16 September	N/R	1,000	N/R	11,365	N/R
17 September	N/R	N/R	N/R	29,100+	N/R
18 September	N/R	11,390	N/R	12,340+	14
19 September	N/R	11,610	N/R	15,800+	2,730
20 September	N/R	40,000	100s	12,170	9,720
21 September	Steady small #s	36,250	1,000	4,175	885
22 September	N/R	1,000s	1,500-2,000	1,100+	600
23 September	N/R	45,700	N/R	11,980	1,190
24 September	2,000	15,730	N/R	110,800	
25 September	N/R	13,000	N/R	73,250	4,200
26 September	N/R	6,440	42,570	9,625	15,600
27 September	11,000	52,000	N/R	5,900	9,100
28 September	1,000s	54,270	N/R	1,200	N/R
29 September	55,659	25,900	N/R	N/R	2,728
30 September	N/R	N/R	N/R	3,000+	14,875
1 October	10,520	N/R	A few 1,000s	158,300	9,015
2 October	7,750	18,000	N/R	N/R	199
3 October	Streaming past	30,310	N/R	20,000	4,920
4 October	observed	N/R	68,000-74,000	16,320	6,059
5 October	8,420	N/R	5215	152,750	3,480
6 October	N/R	N/R	N/R	44,350	5,710
7 October	N/R	29,700	N/R	1,650	N/R

8 October	4,000	41,260	N/R	72,900	4,238
9 October	550	6,500	N/R	A few	4,1000
10 October	5,230	1,800	25,000	10,000	7,785
11 October	N/R	N/R	N/R	56,375	6,064
12 October	N/R	N/R	N/R	15,850	5,002
13 October	2	N/R	N/R	13,150	N/R
14 October	230	observed	N/R	2,000	520
15 October	775	A few	N/R	1,500	380
16 October	N/R	A few	N/R	575+	490
17 October	175	2,000+	N/R	Steady flow (a.m.)	N/R
18 October	Small number	N/R	N/R	8,200	N/R
19 October	N/R	1,000	79	1,810	N/R
20 October	N/R	Large flocks noted	N/R	3,155	N/R
21 October	N/R	1,000	N/R	2,440	N/R
22 October	N/R	N/R	N/R	1,200	N/R
23-31 October	N/R	200 on 29 Oct.	N/R	500 on 25 Oct. and 825 on 26 Oct.	36-74 reported on 2 dates
<b>Total<sup>2</sup></b>	<b>107,311+</b>	<b>446,402+</b>	<b>144,467+</b>	<b>934,592+</b>	<b>186,846+</b>

<sup>1</sup> N/R represents dates when no number or report was made.

<sup>2</sup> When numbers were expressed as a range, the lower number was used to calculate the total reported, and when the numbers were reported as 1,000s or 100s, only 1,000 or 100 was added to the total.

A review of the data presented in Tables 2, 3 and 4 indicates that much larger numbers occur in southwestern Ontario, on average, and the flight continues slightly longer than in areas east of the two Lake Erie hawk watches. The birds are clearly moving west/southwest over a broad front and funnel down to the shores of Lakes Erie and Ontario from both easterly and northerly directions (Figure 2). They gradually increase in number as eastern birds join more westerly and northerly ones as they pass the hawk watches.

The typical peak migratory period occurs between approximately 15 September and 15 October with the greatest numbers reported in late September and early October. Of note were two reports on 27 September 1985 (see Table 2) in Toronto and Pickering where large numbers of birds were observed undertaking a significant reverse migration (i.e. west to east). The flight past Prince Edward Point (1,500 birds on 17 October 1992) represents a relatively large number for that date and location.



Figure 2. A typical autumn migrating flock of Blue Jays. *Photo: Jerry Jourdon*

It is often difficult to analyze the correlation between weather conditions and the flight magnitude, since much of the data are reported in a manner that does not show these correlations. For example, the weather for a given day is accurately reported at the hawk watches, but the timing of the Blue Jay flights is not. If the winds are good in the morning and shift to a more southerly direction mid-day, the data often do not indicate the time when the jays started and stopped moving. That said, a review of the weather data reported on the HBMO website indicates that the most favourable conditions, during the first and middle parts of the migratory period, appear to involve light winds from a northerly or easterly

direction, with cold or cool overnight temperatures, followed by warm daytime temperatures. Persistent rain and strong sustained winds, in excess of about 15-20 km/h, greatly hinder or halt migration. Later in the season, light winds from almost any direction do not seem to unduly influence the migration, as the urge to migrate overwhelms the impacts of less than ideal migratory conditions. Interestingly, and to demonstrate this point, several strong flights at HBMO in early October 2010 occurred under rainy, blustery conditions or very unfavourable winds.

Much more work is needed to fully understand the complex migration of Blue Jays in Ontario. It is suggested that, where resources exist, more accurate counting be



undertaken at key migratory checkpoints along the shores of Lakes Ontario and Erie. Censuses should be quantified following standardized counting procedures and linked closely to time of passing and weather conditions.

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