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The case for accepting Ontario reports of Barnacle Goose

Mike V.A. Burrell

The Ontario Bird Records Committee (OBRC) has been very consistent in its approach to dealing with reports of Barnacle Goose (*Branta leucopsis*) in the province: assume they are escapees unless proven otherwise. I believe this has been a fair treatment of the species since the perception was that they are relatively common in captivity, records did not seem to fit an expected pattern of vagrancy and the species itself was very rare in North America.

However, I believe the time has come (indeed, the time likely came several years ago with the acceptance of the first record) to update this thinking and at least assume birds in certain geographic areas and temporal periods in the province are wild unless evidence is presented to the contrary. In this article, I summarize some arguments for why this paradigm shift should happen now.

Ontario precedent

On about 20 November 2005, a group of hunters including Jean Buswell, Henri Poupart and Jean-Claude Bermond shot an adult Barnacle Goose at Bais De Atocas, United Counties of Prescott and Russell, Ontario. This bird had been banded as a juvenile in November 2004 in the Loch Gruinart Royal Society for the Protection of Birds reserve on the Isle of Islay, Scotland, a well-documented wintering area for Greenland breeding Barnacle Geese, leaving little doubt as to its origin (Richards 2009). This also leaves absolutely no doubt that genuine vagrant Barnacle Geese have occurred in Ontario. This record was actually a tipping point for many in the northeast to change their thinking on the status of this species (e.g., Hanson 2008, Malosh and Pulcinella 2009). Sherony (2008) listed 124 acceptable reports of Barnacle Goose in eastern North America.

Barnacle Goose at Grimsby Harbour, Niagara Regional Municipality on 27 December 2009.
Photo: Chris L. Wood.

Until a draft of the current article was circulated to the OBRC, the Bais De Atocas record remained the only OBRC-accepted record of Barnacle Goose in Ontario. After reviewing the draft article, the OBRC subsequently accepted a 2015 record of two birds observed from 3-4 May 2015 at Mohrs Corner, City of Ottawa (Burrell *et al.* 2017).

Increasingly breeding in eastern Greenland near or alongside Barnacle Geese, the Pink-footed Goose (*Anser brachyrhynchus*) (Wildfowl and Wetlands Trust 2017a) has shown similar increasing trends in vagrancy to northeastern North America (Sherony 2008), but because it is rare in captivity, vagrant sightings are not questioned as are those of Barnacle Goose. Ontario now has three accepted records of Pink-footed Goose: one at Tayside, United Counties of Stormont, Dundas and Glengarry from 30 October-26 December 2015 (Burrell and Charlton 2016), one from Frontenac County on 11 March 2016 and one from United Counties of Stormont, Dundas and Glengarry on 31 October to 7 November 2016 (both accepted by the 2016 OBRC, Burrell *et al* 2017). The 2016 record from United Counties of Stormont, Dundas and Glengarry is almost certainly the same individual as 2015 based on unique plumage details and a very similar arrival location and date (Burrell *et al* 2017).

Sherony (2008) listed 17 reports of Pink-footed Goose and 124 acceptable reports of Barnacle Goose in eastern North America, a ratio of 7.5 Barnacle Geese for every Pink-footed Goose. If we extrapolate the three Ontario records of Pink-footed Goose, we would expect close to 23 Barnacle Goose records.

I compiled a list of reports of Barnacle Goose in Ontario (regardless of whether they were "accepted") from the

following sources: eBird, OBRC, Ontbirds, Peterborough sightings, Ottawa Field Naturalists' Club bird records committee, Clive Goodwin's Ontario notes, North American Birds (and its predecessors), Weir (2008), Black and Roy (2010) and Curry (2006). The raw data are listed in Table 1.

Table 1. Ontario reports of Barnacle Goose sorted by season

Season	Location, census division	Dates	#	Stay (days)
Spring	Port Royal, Norfolk	26-27 Mar 1977	1	2
Spring	Toronto, Toronto	13 Mar 1982	1	1
Spring	Whitby, Durham	1 Apr 1984	1	1
Spring	Shirley's Bay, Ottawa	29 Apr 1984	1	1
Spring	Long Point, Norfolk	28 Mar 1986	1	1
Spring	Petawawa, Renfrew	17 Jun 1986	1	1
Spring	Aylmer, Elgin	21 Mar 1990	1	1
Spring	Nepean, Ottawa	20-21 Apr 2003	1	2
Spring	Presqu'ile Provincial Park, Northumberland	3 Apr 2004	1	1
Spring	Ottawa, Ottawa	6 May 2006	1	1
Spring	Kingsville, Essex	18 Mar 2011	1	1
Spring	Scugog Point, Durham	19 Apr 2012	1	1
Spring	Mohrs Corner, Ottawa	3-4 May 2015	2	2
Summer	Toronto, Toronto	24 Jul 2006	1	1
Summer	Port Colborne, Niagara	2 Jul 2010	1	1
Summer	Stratford, Perth	10 Aug 2012	1	1
Autumn	Kingsville, Essex	27 Oct-15 Dec 1955	5	49
Autumn	Garden Hill, Northumberland	15 Oct-11 Nov 1978	1	27
Autumn	Toronto, Toronto	15 Nov 1978	1	1
Autumn	Toronto, Toronto	24 Oct 1987	1	1
Autumn	Wolfe Island, Frontenac	20 Dec 1992	1	1
Autumn	Pittock Lake, Oxford	12 Nov 2005	1	1
Autumn	Bais Des Atocas, Prescott and Russell	20 Nov 2005	1	1
Autumn	Port Elgin, Bruce	22-29 Nov 2010	1	8
Autumn	Kingsville, Essex	5 Oct 2012	1	1
Winter*	Mississauga, Peel	6 Feb 1983	1	1
Winter*	Mississauga, Peel	18 Dec 1984-15 Feb 1985	1	59
Winter*	Port Credit, Peel	Winter 1986/1987	1	ca. 60+
Winter**	Beamsville, Niagara	9 Dec 2006-7 Jan 2007	1	29
Winter**	Grimsby, Niagara	19 Dec 2009-22 Jan 2010	1	34
Winter	Kingsville, Essex	6 Jan 2012	1	1
Winter	Whitby, Durham	1 Dec 1981	1	1

* presumably the same returning bird was involved in the three winter records.

** presumably the same returning bird was involved in the two winter records. Black and Roy (2010) mention that a Barnacle Goose was present in this area during the winter months of 2007, 2008, 2009, and 2010 and assume only one bird was involved.

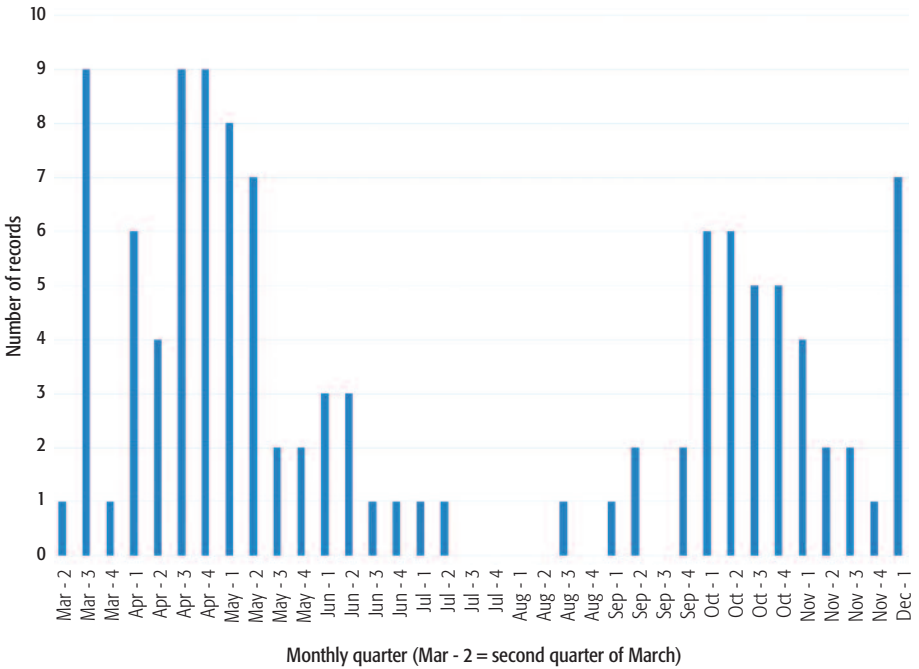

Figure 1. Accepted Barnacle Goose records in Quebec grouped by monthly quarter. There are no records prior to the second quarter of March or after the first quarter of December. *Compiled from Lepage (2017).*

I have classified the June 1986 record as a spring bird as this fits into the timing of the last of the spring sightings from Quebec (Figure 1). Similarly, I grouped the December 1992 record as an autumn bird as it was reported to be with migrant Canada Geese and was not seen later in the winter. The December 1981 bird could likely also be classified as an autumn migrant but no details about the record were available to me. Of the 29 Ontario records, spring birds are most common (13), followed by autumn (9), winter (4), and summer (3).

Spring birds have been detected from 13 March to 17 June (Table 1). The average date of first sighting was 15 April. The average stay-length of spring records is 1.25 days (three records spanned two days, the rest were one day only). The dates of spring records are grouped by geographic area (Figure 2): records from the southwest (Northumberland County west) fall between 13 March and 19 April, and those east of Northumberland County from 20 April to 6 May (plus the June record).

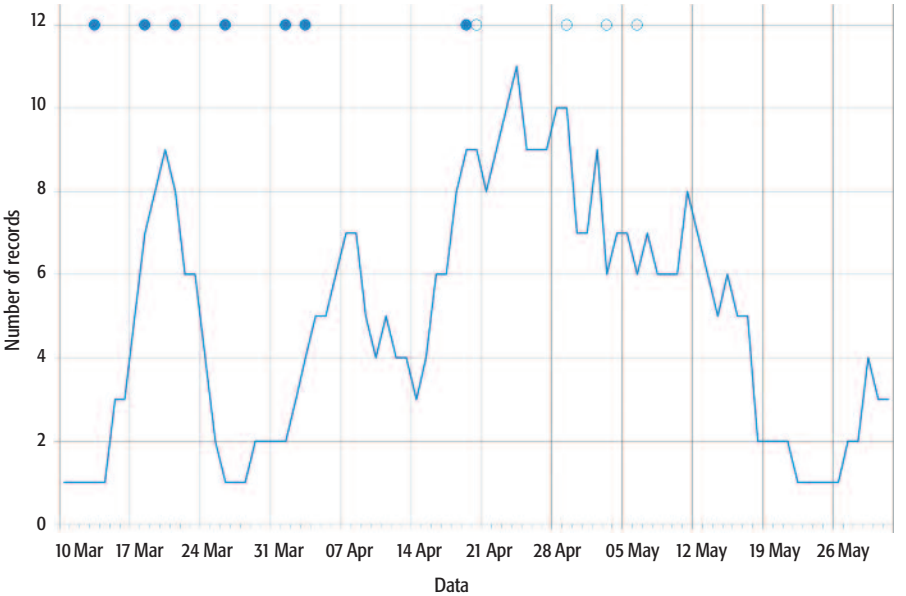

Figure 2. Spring records of Barnacle Goose in Quebec and Ontario. Each Quebec observation is plotted for three days on either side of the reported date to smooth the curve (see text). The filled circles at the top show the dates of spring records of Barnacle Goose in southwestern Ontario while the open circles show the same for southeastern Ontario.

Autumn records (Table 1) span 15 October to 20 December, with three in October, four in November, and one in December. The average date of first sighting was 7 November. The 1955 Essex County birds were present for 49 days, the 1978 Northumberland County bird was present for 27 days and the 2010 Bruce County bird for eight; otherwise all records involved birds on single dates only. The three summer records span 2 July to 10 August, with an average date of 22 July. All three records are from the past ten years.

As indicated in Table 1, while there are seven or eight winter records, it appears to involve only four different birds, with one bird in Peel during the winters of 1982/1983 and one in Niagara Regional Municipality during the winters of 2006/2007, 2007/2008, 2008/2009 and 2009/2010. Of all Ontario records, only the autumn 1955 and May 2015 records were of more than a single individual, with five and two birds, respectively.

Status elsewhere

Greenland

Sherony (2008, 2014) summarized the status of Barnacle Goose and other Greenland breeding goose species and it seems to be well accepted that Greenland is the breeding source of Barnacle Geese arriving in North America (Sherony 2008, 2014, Malosh and Pulcinella 2009). This view is logical as Greenland is the closest breeding location to north-eastern Canada and United States.

Barnacle Goose and other goose species have increased greatly in Greenland in the last 50 years (Sherony 2008). Fox *et al.* (2010) provided an estimate of the Greenland population of Barnacle Goose at 70,500 during the winter of 2007/2008, up from 40,000 in the 1990s. This increasing trend has continued with the most recent surveys of the wintering population of Greenland Barnacle Geese in Ireland and Scotland recording 80,670 during the spring 2013 survey, up 14.4% from the previous survey in March 2008 (Mitchell and Hall 2013). Since these spring surveys began, the population of Greenland Barnacle Geese has increased nearly 8.5-fold from 8,321 in 1959 (Mitchell and Hall 2013). The increasing trend has been remarkably steady during the entire time period (Figure 3).

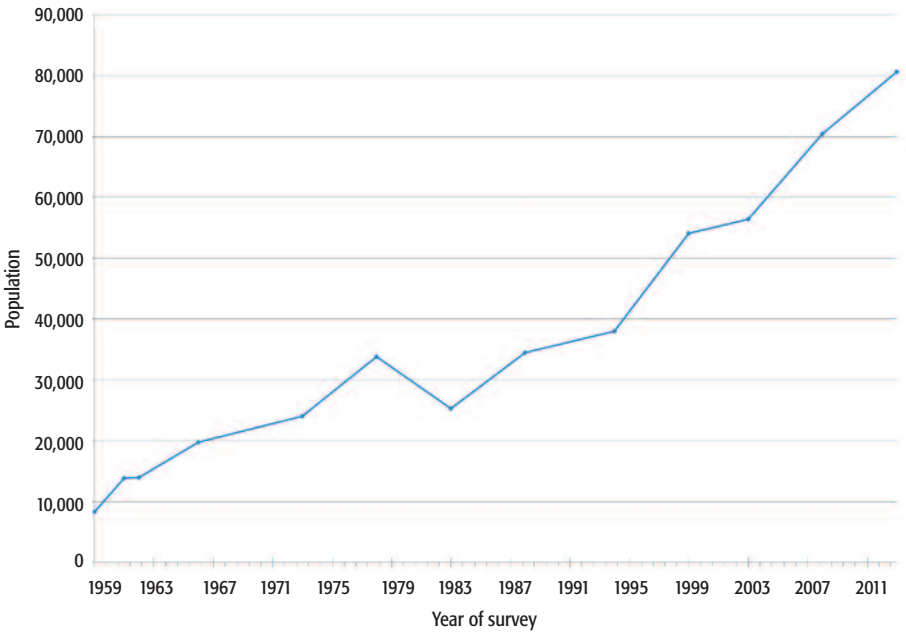

Figure 3. Results of the International Census of Greenland Barnacle Geese wintering in Ireland and Scotland. *Data from Wildfowl and Wetlands Trust (2017b).*

It is important to note that not only is the population of Barnacle Geese breeding on Greenland increasing, but the range of summering/moulting Barnacle Geese is also spreading northward along the eastern coast of the island (Boertman *et al.* 2015). This is of note as it brings Barnacle Geese closer to the Greenland breeding and moulting areas of interior Canada Geese (*Branta canadensis interior*), thereby increasing the chances of birds getting caught up with a migrating flock of Canada Geese and heading for North America rather than to Scotland and Ireland to winter.

Quebec

Based on geography, it stands to reason that western Quebec and upstate New York are the jurisdictions most similar to eastern Ontario in terms of goose migration. The northeastern United States differs in that it has larger numbers of geese, particularly *interior* Canada Geese, in winter, which is when Barnacle and Pink-footed geese are observed there (Sherony 2008).

Lepage (2017) lists 118 records of Barnacle Goose in Quebec, five of which are listed as escaped, rejected, or captive origin. The first record (from 1867) does not have a date. Removing those records leaves 112 for the province. These fall quite nicely into spring and autumn migrants, timed around the movements of migrant Canada Geese—much different than the random pattern one might expect for escapees. The distribution of records in Quebec through the year is shown in Figure 1.

Spring and summer records span 10 March to 15 July and autumn migration spans 23 August to 7 December. There is a spring peak from mid to late March but the densest grouping of spring sightings is from a second peak spanning 17 April to 14 May, which accounts for 33 records. The densest grouping of autumn sightings is from 1 October to 7 November, which accounts for 26 records.

Looking at the data in a slightly different way shows the spring pattern (March to May) a little bit more closely in Figure 2. Here, the number of records within three days either side of a given date is plotted, in an attempt to average out day-to-day variation. There appears to be a peak in mid-late March, but the real bulk of records is in April and May, peaking on 24 April with 11 records within three days (i.e., 21-27 April).

Northeastern United States

In the northeastern United States, Barnacle Geese are now a regular part of the winter avifauna (Appendix 1). Sherony (2008) showed that all Barnacle Goose reports from the east coast of the United States occurred in the time period of 1 October to mid-May. In the Sherony (2014) update, he lists the earliest autumn date for the United States east coast as 6 October with others extending to early April.

Bird records committees in the northeastern United States are all fairly similar in their approach to this species. All of the states from Maine to Virginia were polled and all that replied, with the exception of Virginia, now consider records of this species as wild unless contrary evidence is presented. One state, Connecticut, has now removed this species from its list of reviewable species. Great Lakes states south and west of Ontario have quite a different approach, mostly considering records as

escapees unless evidence to suggest otherwise; not surprisingly with this conservative approach, neither Ohio, Michigan, Wisconsin, nor Minnesota have an accepted record. The summary of responses to my queries about status/treatment of Barnacle Goose records from bird records committees in the northeast is presented in Appendix 1.

Robinson *et al.* (2015) list seven instances of Barnacle Geese banded in the UK being recovered in Canada and the United States: the one Canadian recovery is the Bais De Atocas record and the rest are from the northeastern United States.

Greenland Canada Geese

Canada Geese have been present in Greenland since at least 1864 but have dramatically increased in the past thirty years (Fox *et al.* 2012). The *interior* subspecies is the only subspecies of Canada Goose which has been confirmed on Greenland (Fox *et al.* 2012). Lyngs (2003) states that the species was considered a "scarce vagrant and occasional breeder" prior to the 1970s but since then has rapidly colonized western Greenland. Based on banding recoveries and satellite tracking data, the Canada Geese breeding in western Greenland "cross the Davis Strait in late Sep, passing Labrador, New Brunswick and Massachusetts en route to the wintering grounds in the northeastern United States, primarily Connecticut, New York and Pennsylvania" (Lyngs 2003). Lyngs (2003) summarized their annual movements as follows, "the Canada Geese leave Greenland during the last half of Sep, reaching their general wintering areas in late Oct–early Nov and departing from these by mid Mar."

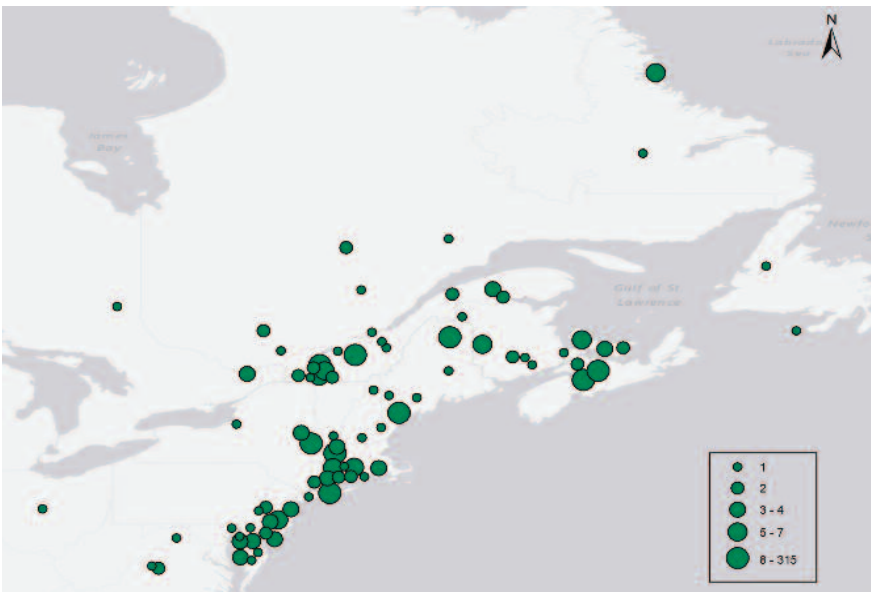

Figure 4. Canada Geese banded in Greenland and recovered or re-sighted in Canada and the United States. *Prepared using data obtained from the Canadian Wildlife Service Bird Banding Office.*

Banding recoveries are the main source of information for determining movement patterns of Greenland Canada Geese; as of 2014, according to data obtained from the Canadian Wildlife Service Bird Banding Office, a total of 233 Canada Geese banded in Greenland had been recovered or re-sighted in Canada or the United States for a total of 787 re-encounters (Figure 4). These re-encounters are concentrated in southern Quebec, easternmost Ontario, New Brunswick, Nova Scotia and the northeastern United States. Also of note, one Canada Goose banded in Pennsylvania was found in Greenland and of particular interest to Ontario birders, a bird banded near Kingsville, Essex County, Ontario, on 4 November 1964, was shot in Greenland the following July (Lyngs 2003).

Some Canada Geese have been satellite-tracked during spring and autumn migration from Greenland to the northeastern United States and Canada. Scribner *et al.* (2003) found that these birds had a similar migration pattern as Canada Geese breeding in the southern Ungava Bay region. That is, they travelled in autumn from southern Ungava Bay, "through central Quebec, eastern New York, western Vermont, Massachusetts, and Connecticut to wintering areas" in New York, Massachusetts, Connecticut, and New Jersey. Greenland-breeding Canada Geese tracked in spring migration also followed an inland route similar to the Ungava Bay breeders, that is, from New York, through the Hudson River and Lake Champlain areas and central Quebec (Scribner *et al.* 2003).

Detection probability

The detection probability of any vagrant species is inherently difficult to calculate as there are a lot of unknowns, chief among them is how many individuals are present but never found. Here I provide some thoughts on this aspect with regards to Barnacle Goose in Ontario.

One assumes a vagrant Barnacle Goose to be in the company of other geese. Through personal communication with members of bird records committees elsewhere in northeastern North America, this is most likely to be *interior* Canada Geese, with a lesser probability of being in the company of Greater Snow Geese (*Anser caerulescens atlantica*). In essence, Canada/Snow Geese are the haystack you have to look through to find the needle. Due to the migration patterns of Canada Geese in Ontario, the size of the haystack one would have to sift through to search for a Barnacle Goose varies considerably between southwestern and southeastern Ontario. To illustrate this point, I extracted all of my eBird data from when spring migration of geese is most prevalent from two census divisions in Ontario: Norfolk County in the southwest and the United Counties of Stormont, Dundas and Glengarry in the southeast (Table 2).

With less than half the effort, I have detected more than seventeen times more Canada Geese in southeastern Ontario versus southwestern Ontario. This imbalance in number versus effort is even more obvious with Snow Geese (82,111 times more in southeastern Ontario). Finding a Barnacle Goose in a flock of several hundred Canada Geese is a realistic prospect. On the contrary,

Table 2. The author's eBird data for spring migration of Canada and Snow Geese in two parts of Ontario.

Metric	Norfolk (March-April) Southwest	Stormont, Dundas and Glengarry (March-May) Southeast
Checklists (n)	470	197
Effort (minutes)	4450	1192
Canada Goose individuals, (checklists)	11,551 (n=252)	193,224 (138)
Snow Goose individuals, (checklists)	5 (3)	410,556 (30)

scanning through a field of thousands (more likely tens of thousands) of Canada Geese searching for a Barnacle Goose is a very daunting task. This problem was exemplified with Ontario's first Pink-footed Goose that was present in a huge flock of Snow Geese in autumn 2015 (Burrell and Charlton 2016). Dozens of observers staked out this flock all day long on the first few days, yet the Pink-footed Goose was visible for only short glimpses a few times a day—even though the bird was known to be in a single flock of geese in a single field! That a brown goose in a flock of mostly white geese could disappear for hours on end was excruciating for some observers, so if Barnacle Geese are expected to show up in large flocks of Canada Geese in eastern Ontario, the task is indeed daunting; we can only speculate how many Barnacle Geese have gone undetected in this part of the province!

Another factor affecting detection probability of Barnacle Goose is observer effort. While it is hard to compare observer effort in various places across the province, we can look at the occurrence patterns of other wild Eurasian waterfowl (Eurasian Wigeon, *Mareca penelope*; Eurasian Green-winged Teal, *Anas crecca crecca*; and Tufted Duck, *Aythya fuligula*), which show up in large (relative) numbers on the east coast and should show a decreasing pattern of occurrence as one moves inland, similar to what we might expect for Barnacle Goose. To look at this, I used the OBRC database for the three species and counted the number of accepted records in each region of the province (Table 3). In all three species, the southwest accounted for most of the records, followed by the southeast and then the northwest and northeast.

Table 3. Eurasian waterfowl records accepted by the OBRC by region of the province.

Region	Eurasian Wigeon (pre-1994 only)	Eurasian Green-winged Teal	Tufted Duck	Total
Northeast	2	0	1	3
Northwest	4	0	2	6
Southeast	15	0	4	19
Southwest	48	7	23	78

Summary of analysis

1. Known vagrant (wild) Barnacle Geese have and are occurring in northeastern Canada and the United States, including Ontario.
2. The presumed source population (Greenland) of these known vagrants continues to increase at a rapid rate.
3. Most records in northeastern Canada and United States follow a predictable geographic and temporal pattern, with most records on the eastern seaboard declining inland, and most records in the migration seasons and winter.
4. Most Ontario records fit this pattern.
5. The OBRC lags behind other jurisdictions' bird records committees in adjusting its stance on this species.
6. How OBRC treats this species in Ontario is considerably different from other Eurasian waterfowl such as Eurasian Wigeon, Tufted Duck and Eurasian Green-winged Teal. For all of those species, we know they are kept in captivity but accept that they can also occur as genuine vagrants so we assume wild unless there is a specific reason to doubt it.

Discussion

Based on the ratio of Pink-footed Goose to Barnacle Goose records summarized by Sherony (2008), the number of Barnacle Goose records in Ontario is remarkably similar to what one would predict based on the number of Pink-footed Goose records, especially if one discards problematic records such as the three summer records and long-staying migrants. The predicted number based on the ratio would be 23 and there are 23 records for Ontario, if one removes the problematic records mentioned above. As noted, there may be additional non-submitted records, so the exact match is likely coincidence, but the relative proportion is notable.

One issue that arises when examining the Ontario records is that there are more records in southwestern Ontario than southeastern Ontario, opposite the trend one would expect based on the distribution of Barnacle Geese in northeastern Canada and United States. This could be explained by a large discrepancy in detection probability (more birders with fewer geese to look through in southwestern Ontario). The same trend occurs for Eurasian Wigeon, Eurasian Green-winged Teal, and Tufted Duck.

The timing of spring migrants matches what one would expect if birds are leaving the United States northeast with other geese. The records from southwestern Ontario have been found in March and April, corresponding with when Canada Geese and Tundra Swans (*Cygnus columbianus*) arrive having wintered in the United States southeast and mid-Atlantic states. The records from southeastern Ontario are mostly from late April and early May, corresponding with the large flocks of United States east coast wintering *interior* Canada Geese passing through and similar to the timing seen in Quebec. The timing of autumn migrants matches those listed by Sherony (2008, 2014) quite well, with the first migrants arriving in early October, but most in November. This also matches the timing of Greenland Canada Goose arrival in the United States northeast (Lyngs 2003).

In addition to the dates of arrival in Ontario matching what one would expect, the overall behavior of birds in terms of stay-length (1-2 days in spring or autumn and long-staying in winter) matches the pattern elsewhere.

One big point of concern when looking at Ontario records is that there has not been a large increase in records in recent years, rather there is a relatively steady number of reports since the late 1970s, which is still the key date as it is when *interior* Canada Geese started colonizing western Greenland, providing a mechanism for vagrant Barnacle Geese to reach northeastern Canada and the United States. The trend is different in southeastern Ontario, however, where five of the eight records have occurred since 2003 (one of the pre-2003 records was the long-staying bird in Northumberland County in autumn of 1978, the long-staying nature being a red flag of an escapee.)

Since the overwhelming perception of this species in the province and the position of the OBRC until recently is that most/all records pertain to escapees, there has been less incentive to document any records. Therefore, the list of records for Ontario that has been analyzed is certainly not a complete list.

Recommendations for the OBRC

Based on the gathered evidence, I think there is a strong argument that the OBRC should be accepting this species as wild, unless there is specific evidence to suggest otherwise. Most Ontario records are of one individual and fall into one of two categories: wintering birds and spring and autumn migrants. Birds that do not fit these trends, or which show signs of captivity should be considered suspect. There will never be a perfect solution for this or indeed for most other waterfowl that are kept in captivity, but the evidence here supports treating Barnacle Goose the same as other exotic waterfowl that are kept in captivity but also known to occur as natural vagrants.

The case for wild origin and true vagrancy is very strong for birds east of approximately Durham Regional Municipality, where they should be considered wild unless proven otherwise, but I think there is a good argument here that even birds seen in southwestern Ontario, given the right circumstances (one or two individuals, short stay length, right migration window, with migrant *interior* Canada Geese) should also be strongly considered as wild.

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Literature Cited

Black, J.E. and **K.J. Roy**. 2010. Niagara Birds. Brock University Printing and Digital Services. St. Catharines, Ontario. 703 pp.

Boertmann, D., K. Olsen and **R. Due Nielsen**. 2015. Geese in Northeast and North Greenland recorded on aerial surveys in 2008 and 2009. Dansk Ornitologisk Forenings Tidsskrift 109:206-217.

Burrell, M.V.A. and **B.N. Charlton**. 2016. Ontario Bird Records Committee Report for 2015. Ontario Birds 34:147-177.

Burrell, M.V.A., B.N. Charlton and **K.G.D. Burrell**. 2017. Ontario Birds Records Committee Report for 2016. Ontario Birds 35:58-85.

Curry, R. 2006. Birds of Hamilton and Surrounding Areas. Hamilton Naturalists' Club, Hamilton, Ontario. 647 pp.

Fox, A.D., B.S. Ebbinge, C. Mitchell, T. Heinicke, T. Aarvak, K. Colhoun, P. Clausen, S. Derelieve, S. Faragó, K. Koffijberg, H. Kruckenberg, M.J.J.E. Loonen, J. Madsen, J. Mooij, P. Musil, L. Nilsson, S. Pihl and **H. Van Der Jeugd**. 2010. Current estimates of goose population sizes in western Europe, a gap analysis and an assessment of trends. Ornis Svecica 20:115-127.

Fox, A.D., D.S., J. Baroch, D.A. Stroud, K. Kampp, C. Egevang and **D. Boertman**. 2012. The status of Canada Goose *Branta canadensis* subspecies in Greenland. Dansk Ornitologisk Forenings Tidsskrift 106:87-92.

Hanson, J.W. 2008. Barnacle Goose Update. New Jersey Birds 34:49-50.

Lepage, D. 2017. Les Oiseaux du Quebec: Dates records et liste des mentions rares: Barnacle Goose. http://www.oiseauxqc.org/details.jsp?no=473. Accessed 28 February 2017.

Lyngs, P. 2003. Migration and winter ranges of birds in Greenland: An analysis of ringing recoveries. Dansk Ornitologisk Forenings Tidsskrift 97:1-167.

Malosh, G. and **N. Pulcinella**. 2009. Acceptance of Barnacle Goose to the official list of the birds of Pennsylvania. Pennsylvania Birds 22:194-199.

Mitchell, C. and **C. Hall**. 2013. Greenland Barnacle Geese *Branta leucopsis* in Britain and Ireland: Results of the International Census, Spring 2013. Wildfowl and Wetlands Trust Report. 37 pp.

Richards, I. 2009. Ontario Bird Records Committee Report for 2008. Ontario Birds 27:58-79.

Richards, J.M., and **A.J. Gaston**. (Eds.) in prep. Birds of Nunavut (Unpublished manuscript and data).

Robinson, R.A., D.I. Leech and **J.A. Clark**. 2015. The Online Demography Report: Bird ringing and nest recording in Britain and Ireland in 2015. BTO, Thetford, England. http://www. bto.org/ ringing-report. Accessed 28 February 2017.

Scribner, K.T., R.A. Malecki, B.D.J. Batt, R.L. Inman, S. Libants and **H.H. Prince**. 2003. Identification of source population for Greenland Canada Geese: Genetic assessment of a recent colonization. Condor 105:771-782.

Sherony, D.F. 2008. Greenland Geese in North America. Birding May/June 2008: 46-56.

Sherony, D.F. 2014. Barnacle Geese in the eastern United States: an update. Kingbird 64:108-113.

Weir, R.D. 2008. Birds of the Kingston Region (2nd edition). Kingston Field Naturalists. Kingston, Ontario. 611 pp.

Wildfowl and Wetlands Trust. 2017a. Pink-footed Goose. Retrieved from http://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme/species-accounts/pink-footed-goose/. Accessed 20 October 2017.

Wildfowl and Wetlands Trust. 2017b. Greenland Barnacle Goose. Retrieved from https://monitoring.wwt.org.uk/our-work/goose-swan-monitoring-programme/species-accounts/greenland-barnacle-goose/. Accessed 10 March 2017.

Appendix 1. Treatment of Barnacle Goose by bird records committees in northeastern Canada and United States.

Region	Reviewable?	Treatment	Notes
Ontario	Yes	Pre-2017: Escapees unless proven otherwise	2 accepted records, 9 origin uncertain, plus at least 18 not reviewed.
Connecticut	No	Wild unless specific contrary evidence	Removed from review list in 2013.
Delaware	No response to request		
Maine	Yes	Wild unless specific contrary evidence	4 accepted records, plus 5 not yet reviewed
Maryland/ Washington D.C.	Yes	Wild unless specific contrary evidence	9 accepted, 7 unknown origin, and 11 unreviewable reports
Massachusetts	Yes	Wild unless specific contrary evidence	14 accepted records dating back to 2002 plus "several" that have not yet been voted on.
Michigan	Yes	Case by case	No records yet accepted as wild.
Minnesota	No response to request		
New Brunswick	No response to request		
New Hampshire	No response to request		
New Jersey	Yes	Wild unless specific contrary evidence	26 accepted records all since 2002. First accepted in 2008
New York	Yes	Wild unless specific contrary evidence	22 accepted or expected to be accepted records since 2006

Region	Reviewable?	Treatment	Notes
Newfoundland and Labrador	n/a (no committee)	n/a (no committee)	3 acceptable records
Nova Scotia	n/a (no committee)	n/a (no committee)	4 acceptable records plus 2 records of family groups that involved escapees.
Nunavut	n/a (no committee)	n/a (no committee)	Three records as follows: August 1924, June 1955, and May 2007 (Richards and Gaston, in prep.).
Ohio	No response to request		
Pennsylvania	Yes	Wild unless specific contrary evidence	38 records prior to 2008 acceptance to state list.
Quebec	No	No committee but Lepage (2017) no longer tracks them.	113 accepted records as of 2016
Rhode Island	Yes	No species-specific policy	1 accepted record, 6 others that have not been submitted yet.
Vermont	Yes	Wild unless specific contrary evidence	4 accepted records since 2007
Virginia	Yes	Provenance uncertain	6 records accepted as provenance uncertain plus a number of records not reviewed.
Wisconsin	Yes	Escapees unless proven otherwise	No records accepted as wild.

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