

Observations on multiple-year tree-nesting by Canada Geese in southern Ontario

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Photos by Ted Armstrong

Introduction

The giant Canada Goose (*Branta canadensis maxima*) was once an uncommon nesting species in southwestern Ontario, and was likely extirpated in Ontario during the period of European settlement (Hughes and Abraham 2007). It was thought to have been extirpated from most of its range by the 1930s (Baldassarre 2014). Its successful reintroduction has made it more widely distributed and more common, and it is now found almost continuously throughout much of southern Ontario, as far north as the north shore of Lake Huron and sporadically further north (Hughes and Abraham 2007), as well as throughout the Atlantic and Mississippi flyways (Baldassarre 2014). The giant Canada Goose adapts readily to urban and agricultural landscapes (Baldassarre 2014).

Breeding Canada Geese are always associated with grasses and sedges as a primary food supply, but they nest in a great diversity of habitats, typically close to waterbodies, with islands suitable for nesting sites (Peck and James 1983,

Sandilands 2005, Baldassarre 2014); islands include muskrat (*Ondatra zibethicus*) houses in marshes and hummocks in the Arctic. In some areas they also nest on cliffs, haystacks and elevated nest sites in trees or on poles (Bellrose 1976). Both the western (*B. c. moffitti*) and the giant Canada Goose have readily adapted to elevated nest structures such as platforms in trees (Yocom 1952, Bellrose 1976) and wildlife managers will often erect elevated nest platforms on poles specifically for nesting geese (Will and Crawford 1970, Cooper 1978).

Most reports of elevated nesting by the Canada Goose relate to low platforms, with trees being used more rarely and with the nests usually in old raptor stick nests. Such use occurs more commonly in western North America. We had the opportunity to observe tree-nesting of a Canada Goose pair over several years in southwestern Ontario. While this was not a rigorous study, we obtained observations that shed some light on this unusual tree-nesting behaviour.

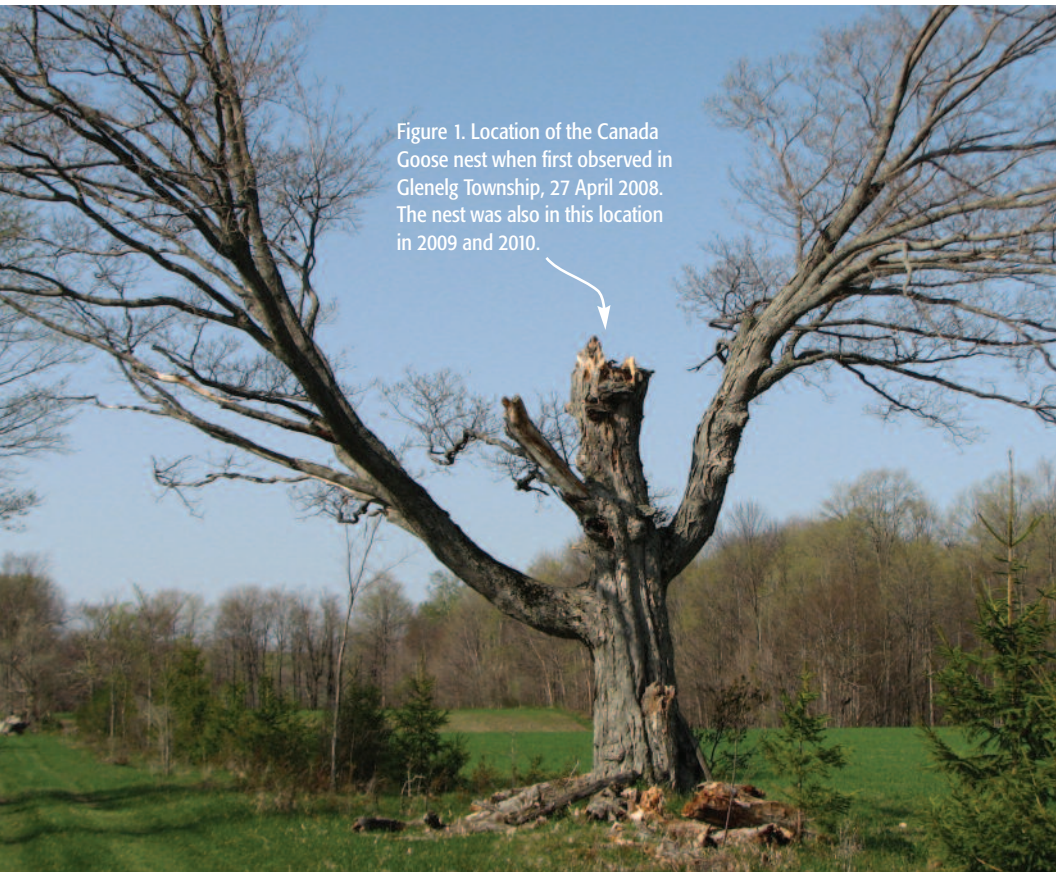


Figure 1. Location of the Canada Goose nest when first observed in Glenelg Township, 27 April 2008. The nest was also in this location in 2009 and 2010.

Study Area

The tree nest was located on a farm in Glenelg Township, Grey County in southern Ontario (44°17'33"N, 80°39'29.6"W). It was adjacent to a farm lane and actively farmed agricultural land. The Canada Goose has been a common resident breeding bird in this area for the past several decades, although this would not be considered a high density population area and this appeared to be the only active nest on the 40.5 ha farm.

Methods

Nesting observations

When possible, observations that we attempted to collect included nesting status and outcome, behaviour of the breeding pair in response to observers and the state of the nest tree. Continuous observations could not be conducted throughout each nesting season, but the nesting site was observed daily for approximately a one-week period (6-8 days) each spring from late April and mid-May between 2008-2017 (except for 2009 when the nest was observed only briefly).



Figure 2. Incubating Canada Goose on tree nest in Glenelg Township, 27 April 2008.

Observations on nesting success were usually possible because this was a working farm and the nest and adjacent fields were observed periodically throughout the spring (DA). Actual observations of nest contents were only made occasionally

because of the almost continuous presence of American Crows (*Corvus brachyrhynchos*) in the vicinity. Observations were usually made from some distance away so as to minimize disturbance to the incubating goose, except for 2008 and 2015 when nest measurements and nest content observations were made. Some disturbance was unavoidable as the nest tree was directly alongside the farm lane-way. As the quality of the nest tree as a nesting substrate deteriorated, efforts were made to secure and support the base of the nest.

Results and Discussion

Nesting observations

Evidence of goose breeding activity and/or presence at the nest tree was observed every spring from 2008-2016, although there was no actual nesting attempt in 2016 (Table 1). When first observed on 27 April 2008, the nest was located 5.8 m high in a recess in the center of the snapped-off main trunk of a dead sugar maple (*Acer saccharum*) (Figures 1 and 2). It was located 338 m from the nearest fresh water, a coldwater stream, although typically nests are very close to water (Baldassarre 2014). Several stream-fed ponds are located within an 850 m radius of the nest, providing potential brood habitat. Giant Canada Geese in South Dakota moved an average of 1.5 ± 1.8 km from the nest site wetland to the wetland where they moulted (range 0.1-4.1 km) (Dieter and Anderson 2009).

Table 1. Summary of observations at Glenelg Township Canada Goose tree nest, 2008-2017

Year	Nesting behaviour, nest tree and predator observations	Nest outcome
2008	Occupied, incubation, 5 eggs Down mostly blown away Female very alert and nervous – head up, flushed quickly when observers still distant (~ 100 m) Female back on the nest less than 5 minutes after observers left.	Unsuccessful
2009	Occupied, apparent incubation Observed only briefly	Uncertain, but apparently unsuccessful
2010	Occupied, incubation Adult very alert; neck high when observers still far away Same nest position as 2008 although main bole had degraded and eroded; 1 egg visible below and away from nest American Crows in vicinity and the likely cause of nest failure	Unsuccessful
2011	Occupied, apparent incubation Nest no longer in main bole of tree, in crotch between main trunk and large lateral branch, most down blown away Adult very attentive to nest, hidden and head low even when observer approaching close to nest	Unsuccessful
2012	Occupied, apparent incubation Adult very attentive to nest, hidden and head down low even when observer approaching close to nest One of two main lateral branches fallen off	Unsuccessful
2013	Occupied, apparent incubation Adult very attentive to nest, hidden and head down low even when observer approaching close to nest Main trunk severely degraded, minimal down in nest	Unsuccessful
2014	Occupied, apparent incubation Adult flattened and tight on nest when observers <50 m away Downy young observed in field (DA)	Successful
2015	Occupied, 5 eggs, incubation Adult very attentive to nest, hidden and head down low even when observer approaching close to nest	Uncertain, but apparently unsuccessful
2016	Pair active in area throughout one-week period Nest site was visited but not occupied; pair at nest site on only one day – both geese standing on remnant of nest base and calling loudly Appeared to no longer be suitable structure to support a nest	No nesting attempt
2017	No Canada Goose presence at nest tree or adjacent farm fields during regular late April/early May observation period	No nesting attempt



Figure 3. Tree-top perspective of the 2008 Canada Goose nest in a dead sugar maple tree, Glenelg Township.

In 2008, the nest contained five eggs, with a base of wood litter and debris (Figure 3). The nest site provided an almost-360° view of the surrounding agricultural landscape, meeting one of the prime Canada Goose nesting requirements which is good visibility over the surrounding terrain (Baldassarre 2014). There was very little down in the nest, as the site was wind-exposed and most of the down had blown away. Eggs of giant Canada Geese in elevated nests, such as those in nest boxes in Manitoba, typically cool more quickly than those in ground nests (e.g., Cooper 1978). Nest sites are more typically selected to minimize wind exposure and maximize retention of solar energy (Mowbray *et al.* 2002).

Predators

American Crows were typically in the vicinity of the nest tree daily, usually on the ground in the adjacent farm fields and rarely more than 200 m away. Crows were seen at the nest site in 2010 after nest failure and abandonment by the breeding pair. No other predators that could affect a tree nest were observed although raccoons (*Procyon lotor*) were common in the area. Canid predators were also common.

Behaviour of the Breeding Pair

While the nesting pair was not banded and we cannot confirm that the same individual(s) were involved annually, the repeated selection of the same site strongly suggests that at least the same female was likely involved in all nesting attempts.



Figure 4. Incubating Canada Goose on nest in lower crotch of tree, exhibiting low profile, 29 April 2013.

The female generally selects the nest site and incubates the eggs (Baldassarre 2014), although males typically remain in the vicinity of the nest site throughout incubation (Mowbray *et al.* 2002). During our observations, while the female was on the nest, there was almost always a sentinel bird in the adjacent pasture or crop field. Usually this bird, presumably the pair male, was between 50-200 m away from the nest tree. While this bird would sometimes flatten down to the ground and remain hidden when observers initially arrived, it would more typically become quite alert, vocal and excited upon arrival of the observers. However, it never approached close to the nest while the observers were in the vicinity, and never displayed the aggressive nest defense behaviour more typical of male behaviour at ground nests. Both birds were seen together in the tree only once, in 2016.

If it was the same female that returned to the nest site annually, her behaviour in

response to human disturbance changed substantially over the course of the study. During the first few years (2008-2010), the goose was very alert on the nest, typically stretching her neck high when the observers were first noticed (see Figure 2) and in the first year, flying off while observers were still greater than 100 m away. After the third year (2011 and beyond), the behaviour of the female on the nest changed noticeably. While still very alert upon the observer's approach, she rarely raised her neck, instead flattening down in the nest bole (Figure 4) and remaining much less likely to flush even when people passed along the laneway directly beside the nest tree. Thus, nest tenacity, a measure of the distance at which an incubating bird flushes from the nest (shorter distance equating to greater tenacity), appeared to increase over time at this nest site, although it typically does not increase with increasing age of the female (Sjoberg 1994).



Nest Tree Changes

The suitability of this tree as a nest site, and thus the location of the nest, became more marginal over time. When first observed in 2008, the nest was securely located in the recessed centre of the trunk where the main bole of the tree had snapped off (see Figure 1). A tree-nesting Canada Goose pair in Calgary, Alberta, appeared to select an almost identical microhabitat in the centre of a snapped-off balsam poplar (*Populus balsamifera*) (Arndt 2016, B. Lefebvre, pers. comm.). The Glenelg Township nest site was heavily wind-exposed and the down mostly blown away, reducing the insulating effect of the nest material. In subsequent years, the site became ever more exposed as the main trunk and lateral branches deteriorated. While it was still located in the centre of the trunk in 2010, by then the edges of the bole had started to decay and there was less structure to keep the nest intact. As a result, the nest was more exposed and an egg



Clockwise:
 5a. 2011
 5b. 2012-2015
 5c. 2016-2017

Figure 5. Changes in condition of the Canada Goose nest tree and the location of the nest over time (arrows) in Glenelg Township.

slipped out of the nest and became lodged below the nest, remaining exposed (Table 1). The nest site appeared to become less suitable and less secure as the tree continued to deteriorate. By 2011, the main trunk bole decayed to the point where it was apparently no longer suitable as a nesting substrate and the nest was located in a lower crotch between the trunk and the highest major lateral branch (Figure 5a). As this site was heavily wind-exposed, some effort was made (DA) to attach poultry mesh along the side of the nest to secure it (Figure 5b). Despite deteriorating conditions, the pair continued to show fidelity to the site even

in 2016 (Table 1). By then, after the lateral branch had been used for several years, the structure of the tree had declined to the point where it did not appear capable of supporting a nest (Figure 5c). The nest tree was unoccupied in 2016 and 2017.

Multiple-year Nesting and Site Fidelity

Canada Geese typically show strong site fidelity to a nesting area, returning annually and frequently re-using the same nest site (Baldassarre 2014). Although there is a great deal of variability, a relationship is sometimes found between nesting success and nest fidelity in subsequent years, with pairs sometimes showing greater fidelity to previously occupied nest sites at which they were successful (e.g., see Maggiulli and Dugger 2011). This nest site was occupied every year from 2008-2015, despite a very low nest success rate. Successful hatching was confirmed in only one year when a young brood was observed in the adjacent field. In all other years, the nest was confirmed or presumed to have failed.

Frequency of Tree-nesting

Tree-nesting by Canada Geese is an unusual but not uncommon nesting behaviour and it is not a recent phenomenon (e.g., Davison 1925). Recognition of this behaviour has led wildlife managers to place nesting platforms in elevated locations to enhance goose nesting success (e.g., Craighead and Stockstad 1961, Will and Crawford 1970). However, tree-nesting appears to be more commonly reported from western North America, primarily for the giant and western subspecies (Baldassarre 2014). Tree-nests in

western North America are most often in old stick nests of birds of prey such as Osprey (*Pandion haliaetus*), Ferruginous Hawk (*Buteo regalis*) and Swainson's Hawk (*B. swainsonii*), but also in old nests of Great Blue Heron (*Ardea herodias*) (Geis 1956, Baldassarre 2014). Geis (1956) noted that 6% of 432 Canada Goose nests in the Flathead Valley, Montana, were in Osprey or Great Blue Heron nests. In the Calgary area, Canada Geese have nested in high densities in trees near the Bow River (B. Lefebvre, pers. comm.), in particular after a violent wind storm that snapped off many trees and limbs and created multiple suitable elevated nesting sites (G. Yaki, pers. comm.). Brakhage (1965) placed artificial nesting structures from 1-20 feet (0.3-6.1 m) high on elevated structures (including trees) in Missouri, but found no correlation between placement height and the use of the nesting structures by geese. However, elevated nesting structures (6-13 m high) in Montana had higher nesting success rates than ground nests (Mackey *et al.* 1988). Elevated nest locations on anthropogenic structures such as balconies, ledges and roof tops are also not uncommon, e.g., building rooftops in downtown Calgary (T. Armstrong, pers. obs.).

Tree-nesting appears to be rare in Ontario. We reviewed Ontario nest record data to determine past records of tree-nesting by Canada Geese (Bird Studies Canada 2017). Some of the historical nest records have not had their nest record cards fully digitized, so some habitat information may not have been available (C. Jardine, pers. comm.). Of the 490 digitized Project NestWatch records

with nest site information for the period 1976-2016, none (0.0%) were reported as being in trees. Seven nests (1.4%) were reported as being slightly elevated and associated with trees, including being among the upturned roots of a fallen tree (3), the trunk of a fallen tree (2), a stump (1) and a root mound at the base of a tree (1). An additional Canada Goose nest (not in the digitized Project NestWatch database) was observed 1.5-2 m high on the fallen trunk of a willow (*Salix* spp.) tree in the Dundas Marsh, Ontario, in 1977 (B. Crins, pers. comm.). In their summary of 541 Ontario nest records, Peck and James (1983) reported Canada Goose nests that were between 0.5-2.5 m high in tree crotches, although they did not reference how many tree nests were involved. At almost 6 m high, the Glenelg Township nest we report here was considerably higher than any of those previously reported. We could not find any other records of tree-nesting by Canada Geese in Ontario.

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