

Observations and interspecific pairing of a Violet-green Swallow and Tree Swallow in northwestern Ontario

Ted (E.R.) Armstrong and Christine Johnston

Introduction

The Violet-green Swallow (*Tachycineta thalassina*) is a rare species in Ontario, having been documented in the province only three times prior to 2017. It is a species of the montane coniferous forests of western North America south to Mexico, and rarely occurs east of the Rocky Mountains (Brown *et al.* 2011).

The Violet-green Swallow is a western counterpart of its congener, the Tree Swallow (*T. bicolor*) (Brown *et al.* 2011). The two species are similar ecologically, their breeding areas overlap in parts of their range, and the degree of ecological overlap requires further research (Brown *et al.* 2011). During the summer of 2017, we had the opportunity to observe a Violet-green Swallow in the Thunder Bay area for an extended period of time, and made a number of interesting observations related to its presence and apparent attempted breeding activity. The Violet-green Swallow was first observed

on 12 June 2017 and observations were subsequently made almost daily until 6 July 2017.

Study Area

The primary study area was a small urban pond (560 m²) that drained from a wetland and railway crossing drainage area into Lake Superior, near the Thunder Bay Marina (48.427869 N, 89.222556 W) (Figure 1). The pond has an average depth of 1.25 m (max. 2 m) and a well-developed open water marsh community with relatively diverse submergent and emergent plants (Senes Consultants Ltd. 2010) (Figure 2). While in a relatively natural area, the pond is surrounded by urban and industrial development and human activity. The intermittent outflow of the pond is crossed by a paved access road, a foot path runs along one side of the pond and major railway tracks cross the inflow to the north of the pond. It is



Figure 1. Aerial view of the urban “habitat pond” where the Violet-green Swallow was observed, June-July 2017. Numbers indicate approximate locations of first and second nesting attempts.
Map data: DigitalGlobe, Google, 2018



Figure 2. Landscape view of the urban “habitat pond” where Violet-green Swallow was observed, June-July 2017, facing eastward. *Photo: Christine Johnston*

a popular area for naturalists and walkers and has been identified as urban greenspace (“habitat pond”) (City of Thunder Bay 2015). Habitat quality is low and degraded compared to most wetlands in northwestern Ontario (Senes Consultants Ltd. 2010); and this area has been the focus of a number of recent habitat rehabilitation and enhancement initiatives. The Thunder Bay District Stewardship Council has placed a number of nest boxes for songbirds and waterfowl in the area surrounding the pond, beginning in 2016. Tree Swallows are the most common nesting species in these nest boxes. They were not as abundant prior to the placement of the nest boxes; for example, no Tree Swallows were reported in bird monitoring studies at the Marina Park study area, including the habitat pond, in May-October 2009 (Senes Consultants Ltd. 2010).

Methods

The Violet-green Swallow was first identified (CJ) on 12 June 2017. Subsequently, observations were made almost daily, primarily by CJ, and photographs were taken. Observations (often 3 to 4 hours/day) occurred primarily in the morning, typically between 09:00 and 13:00, and occasionally later in the day. Observations included presence, apparent nesting behaviour, nest box observations and behaviour of the breeding pair in response to observers. Actual observations of nest contents were made only occasionally to minimize disturbance and residual nest contents were assessed at the end of the nesting season.

Results

Breeding observations – Tree Swallow activity

Tree Swallows were active at the site from spring through mid-summer. Most Tree Swallow nesting activity in the adjacent nest boxes began well before the Violet-green Swallow arrived. Swallows were active in the area on 19 May 2017, including perching on nest box roofs. Many were observed entering nest boxes on 29 May 2017, although specific numbers and locations were not recorded. There was often a great deal of flying and foraging activity by swallows over the pond and adjacent land, as well as birds perched on nest box roofs or in box entrances. By the end of the nesting season all of the 15 swallow nest boxes (100%) that were monitored had evidence of swallow occupancy (i.e., one or more adults entering, and/or the presence of nest, eggs and/or young), and 11 (73%) were known to have had occupancy prior to the first observation of the Violet-green Swallow. The number of swallows active in the pond area often exceeded the 30 birds that would have been represented by the 15 pairs at the active nest boxes. One duck nest box also contained a partial Tree Swallow nest. By 23-27 June, all remaining active Tree Swallow nest boxes contained young ranging from recently hatched to nearly fledged and none were incubating eggs.

Breeding observations – first Violet-green Swallow nesting attempt

When first observed on 12 June 2017, the Violet-green Swallow was flying above the pond among a group of Tree Swallows. It flew to a nest box and perched on the roof and in the entrance, and later entered and exited the nest box (Figure 3). A presumed male Tree Swallow was perched on a nearby branch and was later observed on the roof of the same nest box. Both birds were observed flying in and out of the box separately. The nest box was designed for Tree Swallows but did not have a predator guard, and was located east of the pond on the edge of a small clearing very close to shrub vegetation (i.e., more edge habitat than open habitat) (see location 1, Figure 1). This nest box had been empty earlier in the spring. It was checked during the week of 5 June 2017 and had no swallow nest, but did contain an apparent



Figure 3. Violet-green Swallow at nest box on first day observed, 12 June 2017.

Figure 4. Female Violet-green Swallow (upper) and male Tree Swallow (lower) at nest box, 16 June 2017. Photos: Christine Johnston



red squirrel (*Tamiasciurus hudsonicus*) nest. On 16 June 2017, the Violet-green Swallow and the male Tree Swallow were seen entering the nest box together, and were subsequently seen together at the nest box several times until 17 June 2017 (Figure 4). The Tree Swallow was observed bringing feathers to the Violet-green Swallow inside the nest box (Figure 5). Several apparent copulation attempts were observed by Vandermeulen (2017). It was apparent that the Violet-green Swallow was nest building and it was observed bringing feathers to the nest box over several days (Figure 6). The swallow was observed daily during this period, often flying over the pond or perching on an adjacent power line. Nest contents were not checked during this

time period, although there was apparently only a minimal nest and no eggs on 14 June 2017 (Vandermeulen 2017).

On 17 June 2017 at 21:30, a red squirrel was observed entering and leaving the nest box (Figure 7). As the squirrel ran up the pole, a large number of Tree Swallows nesting at the pond flew to the nest box and dive-bombed the intruder. The swallows were initially successful in preventing the squirrel from entering the nest box but the squirrel attempted a second entry and entered the nest box. All of the Tree Swallows continued vocalizing and dive-bombing the nest box. After a few minutes, the squirrel exited the nest box at 21:56 and ran off, after which the Violet-green Swallow and a Tree Swallow perched on a nearby branch, their usual

Figure 5. Male Tree Swallow (left) bringing feather to female Violet-green Swallow inside the nest box, 17 June 2017.

Photo: Christine Johnston



Figure 6. Female Violet-green Swallow bringing feather to nest box, 17 June 2017.

Photo: Christine Johnston



Figure 7. Red squirrel at nest box being harassed by Tree Swallow, 17 June 2017.

Photo: Christine Johnston



perching site. The other swallows returned to their respective nest boxes and continued their usual activities. The Violet-green Swallow and her mate later flew off and were never observed to visit this nest box again. After waiting to ensure that the nesting attempt had been abandoned, the nest box was opened on 20 June to look for evidence of breeding. It was found to contain a swallow nest on top of the squirrel nest (Figure 8). There were no eggs.

Breeding observations
– *second nesting attempt*

On 18 June 2017, the Violet-green Swallow was observed at another nest box on the other side of the pond, approximately 98 m from the first nest box (see location 2, Figure 1). This nest box was in more open herbaceous habitat near the pond, with some individual shrubs. When nest boxes were observed earlier during the week of 5 June 2017, this nest box had two swallows perched on the roof. On 21 June 2017, the Violet-green Swallow was seen gathering nesting material (Figure 9)



Figure 8. Abandoned swallow nest built on top of red squirrel nest, June 20 2017.

Photo: Ted Armstrong

Below. Figure 9. Female Violet-green Swallow gathering nesting material, 21 June 2017.

Photo: Christine Johnston



Figure 10. Female Violet-green Swallow (lower) and male Tree Swallow (upper) at second nest box, 27 June 2017.

Photo: Christine Johnston



and bringing it back to the nest box. The Violet-green Swallow and a Tree Swallow, presumably the same male from the first nest attempt, were regularly seen at the new nest box (Figure 10). Two Tree Swallows were observed fighting on and directly adjacent to the nest box while the Violet-green Swallow was in the box (Figure 11). On 1 July 2017, the Violet-green Swallow was observed briefly visiting a neighbouring nest box containing a swallow nest with four eggs that had been abandoned earlier in June.

On 2 July 2017, the nest box contents were briefly checked. The nest had the appearance of a typical Tree Swallow nest). The Violet-green Swallow was in the nest box and two eggs were present. The Violet-green Swallow continued to be seen in the vicinity of the pond, although the bird was never again observed at the nest box. It was last observed on 6 July 2017, when most Tree Swallows had already dispersed

Figure 11. Tree Swallows fighting at second nest box entrance, 28 June 2017.

Photo: Christine Johnston

Below. Figure 12. Nest box contents of second nesting attempt (photo taken after nest abandonment, 27 July 2017).

Photo: Ted Armstrong





Figure 13. Eggs in nest of second nesting attempt (photo taken after nest abandonment, 27 July 2017).
Photo: Ted Armstrong

from the site (only three were observed on that date). The nest box was not checked again until 27 July 2018, when two abandoned eggs were present (Figures 12 and 13).

Observations of birder behaviour

As a significant provincial and eastern North American rarity, there was a great deal of birder interest in this observation (e.g., American Birding Association 2017, Vandermeulen 2017). Birders arrived from across Ontario and further afield. At times, several groups of birders were visiting the site at the same time to view the bird. While the Violet-green Swallow appeared to be little affected when viewed from a distance and would sometimes closely approach observers while gathering nesting material, at times the interest from photographers and birders was very high and the first nest box was often closely approached. There was a distinct, well-worn path in the grass from the main trail to the first active nest box and a large area of flattened grass, slightly less than a metre square, immediately in front of the nest box entrance. There was considerable online discussion of appropriate viewing ethics as this sighting gained prominence. Subsequently, the location of the second nest attempt was not as widely disseminated. There appeared to be much less disturbance of this site although many birders and photographers still visited the locale to observe the bird. This nest site was also situated further away from the main trail system in the area.

Discussion

The occurrence of a Violet-green Swallow in Ontario is a very rare occurrence. An individual has been reported only three times previously: at Thunder Cape on the northwestern shore of Lake Superior (October 1992), at Long Point on the northern shore of Lake Erie (August 2014) and in the Ottawa area in eastern Ontario (April 2013) (Bain 1993, DiLabio 2013, Mackenzie 2014). None of these occurred during the breeding season, although the two southern Ontario sightings occurred on either side of it. A mid-summer sighting of this species is thus unique. The bird was first noticed and observed on 12 June 2017 because of a white feather stuck to its foot (see Figure 3). Given the large number of swallows nesting in this area and the high degree of swallow activity occurring over the pond, it is possible that this bird was present but not identified prior to that date. Being observed for over three weeks and possibly being present for longer, this individual was present in the province for much longer than the 1-2 day periods represented by all previous sightings.

There is no previous record of a Violet-green Swallow attempting to nest in Ontario, which is not surprising given how far it is from the species' normal breeding range. There are no breeding records in Manitoba (Bird Studies Canada 2018a) and the nearest breeding records appear to be in the extreme southwestern portion of Saskatchewan (Bird Studies Canada 2018b). The species appears to be increasing in the northeastern part of its range (Brown *et al.* 2011). Violet-green and Tree Swallows

are in the same genus, overlapping in parts of their breeding range (Brown *et al.* 2011), and they will nest in the same area (e.g., Gullion 1947). Formation of pair bonds between these two species is extremely rare. There has never been a confirmed occurrence of the two species hybridizing within normal Violet-green Swallow breeding range, although there was one report of an apparent hybrid offspring from these two species in Washington state, US, on 1 August 2010 (Appleton 2014). There has only been one previously reported instance of a mixed breeding pair (Brown *et al.* 2011), an unsuccessful pairing between a female Violet-green and a male Tree Swallow in Illinois in 1994 that also resulted in two unhatched eggs (Johnson and Moskoff 1995). It is interesting to note that in both cases, a female Violet-green Swallow paired with a male Tree Swallow, and in both cases the former was outside of its normal breeding range. There is one record from British Columbia of an apparent hybrid Violet-green Swallow x Cliff Swallow (*Petrochelidon pyrrhonota*), a product of two different genera (Whittington 2000).

While Violet-green Swallows are secondary cavity nesters (Ryder 2015) that will use nest boxes (Whittington 2000, Brown *et al.* 2011), but they primarily nest in rock cavities on cliffs. Tree Swallows are also secondary cavity nesters, but they use nest boxes much more frequently (Winkler *et al.* 2011). All other monitored nest boxes (with swallow design and specifications) in this study area were used by Tree Swallows. The first nest box selected by the mixed-pair

was closer to dense woody vegetation than most boxes, but was one of a very few still available for nesting later in the nesting season. The red squirrel nest was actually present prior to occupancy by the swallows, and materials for the swallow nest were clearly placed on top of the squirrel nest. The occupancy of the nest by a squirrel prior to construction of the swallow nest may have been facilitated by the nest box's close proximity to tree and shrub vegetation. Nest contents were not checked and it is unclear if any eggs were laid in this first nesting attempt. After observation of the squirrel in the nest box, the pair was not observed to approach or re-enter the box. Red squirrels are known to be predators of eggs and young in passerine nests in both conifer forest and forest edge habitats (Bayne and Hobson 2002, Willson *et al.* 2003), although neither Brown *et al.* (2011) nor Winkler *et al.* (2011) refer to them in a list of known nest predators for either swallow species. Whether either squirrel or human disturbance was a factor in this nest abandonment is uncertain.

The pair very quickly initiated a second nesting attempt at a different nest box the day following disturbance of the first nest by the squirrel. While a single brood is the norm among Violet-green Swallows (Brown *et al.* 2011), re-nesting is not unusual and the species will often rear two broods (Gullion 1947). In fact, Gullion (1947) noted that Violet-green Swallows will often begin two nests simultaneously until committing to use one of them, and will often re-nest later in the season in the second partially

completed nest. Almost 50% of Tree Swallows in two beaver ponds in south-eastern Ontario defended two nest sites, with one hypothesized purpose being to ensure a re-nesting opportunity if the first nest fails (Rendell and Robertson 1994). It is quite possible that this second nest was initiated prior to 18 June, and even possible that the female Violet-green Swallow was one of the pair of swallows seen perched on this box during the week of 5 June. As one of many swallows active in the area, its identity as a different but very similar swallow species could have been missed. Very few observations of the Violet-green Swallow were made after the second nesting attempt was checked on 2 July 2017, and the reason for abandonment is not clear. Although it is possible that the checking of the nest was a factor, it seems unlikely. All other swallow nests continued to be active after similar brief nest checks. Monitoring protocols for Tree Swallow nests suggest monitoring at least every three days during clutch initiation (Alaska Swallow Monitoring Network 2017), and in some intensive Tree Swallow studies nests are monitored daily during egg laying (Hussell 2003).

This occurrence of the Violet-green Swallow was notable for several reasons. It was only the fourth sighting for Ontario, and the second for Thunder Bay District. A breeding season observation of this rare bird from western North America over several weeks resulted in a great deal of interest from birders, naturalists and photographers both near and far. The fact that it occurred in a re-naturalized area in the midst of a proposed

waterfront development area created greater awareness of the value of this natural area, and both affirmed past habitat rehabilitation efforts and supported future habitat preservation and remedial work. Being only the second or perhaps third known occurrence of an interspecific pairing between Violet-green and Tree Swallows made this event more significant.

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Ted (E.R.) Armstrong
 615 Rosewood Crescent
 Thunder Bay, Ontario P7E 2R5
 E-mail: tedarmstrong11@gmail.com

Christine Johnston
 123 Regent Street
 Thunder Bay, Ontario P7A 5G8