

New avian breeding records for Kugluktuk, Nunavut

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Abstract

New breeding records for 10 species of tundra and boreal nesting birds were documented near the community of Kugluktuk (Nunavut, Canada) over the course of the 2015 and 2016 breeding seasons and incidentally in 2017 and 2018. These species include American Wigeon (*Mareca americana*), Mallard (*Anas platyrhynchos*), Northern Shoveler (*Anas clypeata*), Green-winged Teal (*Anas carolinensis*), Greater Scaup (*Aythya marila*), Say's Phoebe (*Sayornis saya*), Canada Jay (*Perisoreus canadensis*), Grey-cheeked Thrush (*Catharus minimus*), Yellow-rumped Warbler (*Setophaga coronata*), and Dark-eyed Junco (*Junco hyemalis*). Previously unpublished breeding evidence for Bald Eagle (*Haliaeetus leucocephalus*) is also discussed along with suspected breeding of Barn Swallow (*Hirundo rustica*), Bohemian Waxwing (*Bombycilla garrulus*), White-throated Sparrow (*Zonotrichia albicollis*), and Pine Grosbeak (*Pinicola enucleator*). These records represent the first described breeding occurrences for these species in the Kitikmeot region, or new records for the mainland of Nunavut. A lack of historical ornithological survey effort in this area has likely led to the diversity of these previously unrecorded breeding observations. These results highlight the need to increase geographic coverage of bird surveys in northern Canada to more accurately delineate the northern limit of breeding ranges and suggest that further formal survey effort will undoubtedly lead to additional new breeding records.

Key words: Breeding records; range extensions; Arctic; Nunavut; Kugluktuk

Introduction

Located in the westernmost portion of Nunavut, Kugluktuk boasts some of the greatest diversity of terrestrial flora (Saarela *et al.* 2017) and fauna in the territory (Lamont and Knags 2016; eBird 2017). The region is also well known for harbouring robust populations of diurnal birds of prey, observed during surveys in the 1980s and 1990s before the establishment of Nunavut (Bromley and McLean 1986; Shank *et al.* 1990) and confirmed through more recent raptor surveys (Lamont *et al.* 2016, 2018).

Until recently, little ornithological survey activity has occurred near the hamlet of Kugluktuk. Previous surveys in the mid-2000s were made from rotary and fixed-wing aircraft and targeted mainly breeding waterfowl (Conant *et al.* 2007; Groves and Mallek 2011) or nesting raptors (Bromley 1982; Bromley and McClean 1986; Shank 1996; Lamont *et al.* 2016). Such methods lack the precision needed to detect young or nests, particularly of Passeriformes. In spring 2017, the first set of the Arctic Program for Regional and International Shorebird Monitoring (PRISM) surveys was undertaken around Kugluktuk by the Canadian Wildlife Service (J. Rausch pers. comm. 6 June 2017).

This overall lack of survey effort, compared with other parts of the territory, which have seen years or decades of ornithological research and amateur birding (e.g., Bylot Island, Cambridge Bay, Coats Island), has resulted in a potential gap in our understanding of the true breeding range of some avian species in the western Kitikmeot. The proximity of the treeline to Kugluktuk, in addition to the northward flow and funnelling valleys of the Coppermine, Richardson, and Rae Rivers, all contribute to the presence of species in the region that are

normally only found at much lower latitudes elsewhere in the territory. Summarized herein are observations of detected nests and recently fledged young for 10 species of birds, previously lacking breeding evidence for the territory or for the Kitikmeot region. I follow the recent examples of Hussell *et al.* (2012) and Lecomte and Giroux (2015), who highlight the importance of documenting and reporting new breeding records in Nunavut to help expand our knowledge of avian distributions in the Canadian Arctic and to potentially aid in detecting changes in bird communities at given locations over time.

Methods

Kugluktuk is located in the western Kitikmeot region of Nunavut, at the mouth of the Coppermine River (67.81°N, 115.09°W; Figure 1). This area is within the Southern Arctic Terrestrial Ecozone (Wilken 1986): mean annual temperature is -11°C, mean summer temperature 5°C, and mean winter temperature -26°C, average annual precipitation 200 mm (northern part of the region) to 300 mm (southern portions). A nearly continuous cover of shrub tundra vegetation exists, consisting of Alaska Willow (*Salix alaxensis* (Andersson) Coville var. *alaxensis*), Arctic Willow (*Salix arctica* Pallas), Dwarf Birch (*Betula glandulosa* Michaux), Alpine Bearberry (*Arctostaphylos alpina* (L.) Niedenzu), Dwarf Labrador Tea (*Rhododendron tomentosum* subsp. *decumbens* (Aiton) Elven & D. F. Murray), and *Dryas* spp. and sedge (*Carex* spp.) tussocks (Wilken 1986). The proximity to the treeline and the more temperate microclimates associated with the Coppermine, Rae, and Richardson River valleys, provide shelter from harsh Arctic winds for a variety of plant species.

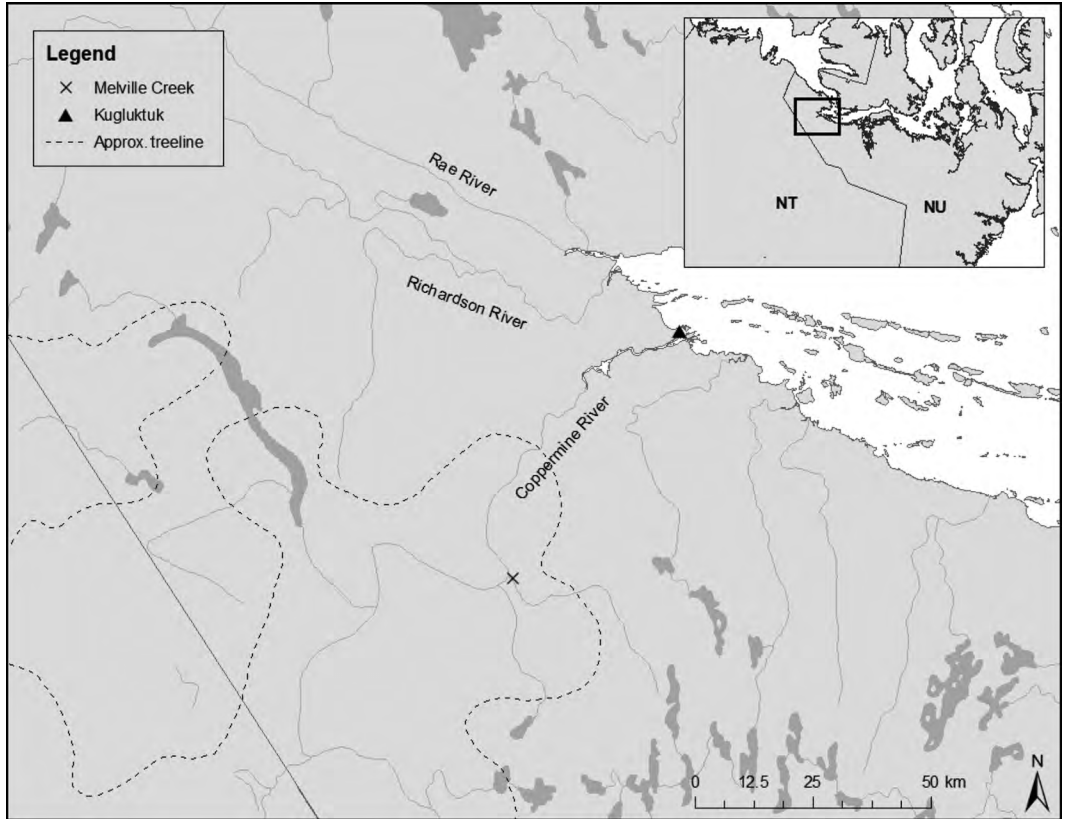


FIGURE 1. Location of the study area, Kugluktuk, Nunavut depicting the Rae, Richardson and Coppermine Rivers and the location of Melville Creek, south of Kugluktuk.

I conducted localized, visual, ground surveys within a 20-km radius (unless otherwise noted) of Kugluktuk. Incidental observations and surveys were undertaken throughout the year, from 1 January 2015 through 31 August 2016 while I was living in the hamlet, with an additional week of observations in July 2017 and one week in June and July 2018, respectively. All ground observations were made on the west side of the Coppermine River. Ground surveys were undertaken systematically following Arctic PRISM protocols (Bart and Johnson 2012), through targeted habitat surveys and opportunistic encounters. Nests and/or recently fledged young were documented to confirm breeding activity.

Results and Discussion

AMERICAN WIGEON (*Mareca americana*)

During the 2015–2016 field seasons, this species was observed feeding in local wetlands, ephemeral pools, and ponds around Kugluktuk, often with other species of waterfowl such as Northern Pintail (*Anas acuta*) and Mallard (*Anas platyrhynchos*). On 13 July 2016, a female was flushed from a small pond, accompanied by nine ducklings of age subclass Ia (Figure S1).

American Wigeon is known to favour taiga environments and is often found in the transition zone between

boreal and tundra ecozones (Silver *et al.* 2012; Mini *et al.* 2014) and on Akimiski Island (K. Abraham pers. comm. 21 August 2016); however, despite these habitat preferences, relatively few records exist for Nunavut. The first documented breeding evidence was recorded by Harper (1953) near Windy River (south Kivalliq); one other observation of recently fledged young occurred in Bathurst Inlet in 1996 (eBird 2017). The breeding record described here is believed to be only the second and northernmost breeding evidence for the territory.

MALLARD (*Anas platyrhynchos*)

In 2015, several pairs of Mallards were observed in the vicinity of Kugluktuk, occupying small ponds and foraging in ephemeral pools. Pursuit flights were often observed during the spring months. On 13 July 2016, a female was flushed from the edge of a small pond with two young, approximately age subclass Ib (Figure S2).

Although Mallard has a wide distribution and is considered a habitat generalist (Drilling *et al.* 2018), only sporadic observations of this species exist north of the treeline (eBird 2017). The only previous confirmed breeding records in Nunavut are from James Bay on Stag Rock, where a nest with ten eggs was found on 26 June 1995 (Tymstra 1997) and near Windy River, where young and nests have been observed (Harper 1953). The

record described here is believed to be the westernmost and northernmost breeding evidence for the territory and the first for the Kitikmeot region.

NORTHERN SHOVELER (*Anas clypeata*)

Sightings of this species occurred regularly throughout the 2015–2016 seasons. On 18 May 2015, six males and five females were observed, followed by two pairs on 31 May, and eight males and only one female on 21 June. On 24 June, a female was flushed from a nest. The clutch consisted of nine eggs and was located in a small, wet sedge meadow approximately 20 m from a small pond (Figure S3). Several pairs were again seen in 2016, although no nesting was confirmed.

Few observations of this species exist in northern Canada (J. Richards pers. comm. 23 August 2016; eBird 2017). It is present throughout the coast of James Bay in Ontario and on the west side of Hudson's Bay (Ross and North 1983; eBird 2017); however, there are no nesting records for Nunavut except one on Akimiski Island from 21 May 2001 (K. Abraham pers. comm. 19 March 2016). Several pairs have recently been observed in Cambridge Bay (S. Menu pers. comm. 10 June 2016; eBird 2017). The breeding record described here is believed to be the first for mainland Nunavut and the northernmost breeding evidence for the territory.

GREEN-WINGED TEAL (*Anas carolinensis*)

Regularly seen in both 2015 and 2016, with more males than females observed in both years, this species made extensive use of small ponds and ephemeral pools for breeding, feeding, moulting, and rearing young. In 2015, pursuit flights and courtship were observed with breeding suspected. On 13 July 2016, a young duckling of age subclass Ia was seen feeding on the surface of a pond and the female later flushed (Figure S4). Two flightless males in mid-moult were also flushed from the same area. On 20 July 2016, a second brood of eight young of age subclass Ib was encountered in the same location.

Although this species is usually associated with boreal ecosystems (Johnson 1995), a surprising number of records exist above the treeline in Nunavut, but most lack breeding evidence (eBird 2017). A female with 10 young was observed on Carey Island, James Bay, on 21 June 1995 (Tymstra 1997), and Harper (1953) describes records of young birds near Simon's Lake in the southern Kivalliq region. Beyond these two records, little evidence has been formally described in the literature for Nunavut. The breeding record described here is believed to be the westernmost and northernmost breeding evidence for the territory and the first for the Kitikmeot region.

GREATER SCAUP (*Aythya marila*)

Numerous pairs of this species were observed in both 2015 and 2016. Multiple pairs were observed feeding in shallow ponds or pools, some ephemeral. In 2015, courtship behaviours were observed, but no nests or fledged young were found. On 13 July 2016, a female was flushed from a nest (Figure S5) in a sedge meadow,

in close proximity to where courtship was detected the previous year. The clutch consisted of eight eggs and appeared to be in a late stage of incubation based on the size of the air cell. On 26 July 2016, 12 males and three females with 28 ducklings were observed on a large pond 10 km west of Kugluktuk. Broods were all approximately the same age and appeared to be of subclass Ib.

Mainly restricted to coastal tundra from Alaska east to Hudson's Bay and the Nunavik region (Kessel *et al.* 2002), this species has been found in low densities from Kugluktuk to Cambridge Bay, through the Queen Maud Gulf and in inland areas of the southern Kivalliq region (Conant *et al.* 2007; Groves and Mallek. 2011; eBird 2017). Harper (1953) describes the species as breeding in southern Kivalliq, but suggests that they do not extend appreciably into the barren grounds. The record described here is believed to be the westernmost and northernmost breeding evidence for the territory and the first for the Kitikmeot region.

SAY'S PHOEBE (*Sayornis saya*)

On 24 May 2016, one male was observed within the town limits of Kugluktuk. The bird responded aggressively to recorded calls of conspecifics. On 28 May 2016, two birds were seen near a large cliff face 100 m south of the initial observation. On 19 June, only one bird was observed, feeding and returning to a large cracked rock slab that created a small crevice about 20 m up the cliff wall. The bird would continually feed and return to this location, occasionally entering the structure and returning into view several minutes later. On 21 July 2016, both adults were observed carrying food to the same location and presumably feeding a chick. On 26 July 2016, a second breeding pair was observed carrying food, and a young bird was heard begging along a cliff face, approximately 1 km south of the previous site. A nest was soon detected under a rock overhang about 2 m above the ground (Figure S6) with two infertile eggs still present. A single fledged young was observed, nearly adult size, and capable of extended flight. This same nest location was visited exactly one year later and found to have been active that season with one infertile egg still present. The same site was visited again in June and July 2018 and was active.

The timing of arrival of this species in Kugluktuk is consistent with what is known for male and female arrival on territories (Dawson 1923; Johnsgard 1979) despite its northern latitude. Both observed nesting sites were typical of what has been described for the species (Bent 1942; Schukman *et al.* 1976). It is worth noting that the abandoned nest discovered with two infertile eggs in 2016 was removed for photographic and archival purposes and was rebuilt in exactly the same fashion and location, with nearly identical nesting materials and re-occupied, presumably, by this same pair in the 2017 season. This same process of nest removal and archiving was repeated in 2017 after the nest was abandoned, and re-made and reused in 2018 as it was the previous year. Of interest were two observations of territorial birds re-

sponding to playback during a raptor survey in July 2017: one record 70 km west of Kugluktuk and another 30 km east of Kugluktuk. It is likely that additional surveys in the Kitikmeot, particularly on rock bluffs with a southern aspect, would result in a number of additional breeding records.

Only one previous breeding record for Nunavut exists, this being a photographed nest site on a shed on Nauyak Lake on Kent Peninsula on 28 June 2008 (J. Richards pers. comm. 11 June 2016; eBird 2017). The records described here are believed to be the westernmost confirmed breeding evidence for the territory.

CANADA JAY (*Perisoreus canadensis*)

A pair and two juveniles were seen and photographed on 24 July 2018 (Figure S7) near the confluence of Melville Creek and the Coppermine River ~60 km south of the Kugluktuk. Multiple birds were heard calling. The species has apparently been established along the treeline for many years (A. Niptanatiak pers. comm. 25 July 2018) and has likely gone unnoticed by ornithologists due to a lack of survey effort. Habitat was dominated by Black Spruce (*Picea mariana* (Miller) Britton, Sterns & Poggenburgh), including relatively large specimens, upwards of 50 cm in diameter and 10 m tall, with an understorey of waist high Dwarf Birch, *Salix* sp., Shrubby Cinquefoil (*Dasiphora fruticosa* (L.) Rydberg), and a carpet of moss. The ecology was very similar to boreal forest found further south, with the sheltered river valley providing refugia for this habitat to proliferate. The records described here are believed to be the northernmost confirmed breeding evidence for the territory (Richards and Gaston 2018).

GRAY-CHEEKED THRUSH (*Catharus minimus*)

I observed a recently fledged juvenile on 24 July 2018 (Figure S8) near the confluence of Melville Creek and the Coppermine River ~60 km south of Kugluktuk. The chick still had downy feathers on his crown and nape. Multiple birds were heard calling prior to the sighting. Habitat conditions were similar to those described for Canada Jay. The records described here are believed to be the northernmost breeding evidence for the territory (Richards and Gaston 2018).

YELLOW-RUMPED WARBLER (*Setophaga coronata*)

I observed a pair of birds in a willow thicket within the hamlet limits on 8 June and again on 20 June 2015, followed by observations of a singing male over the course of June and July 2015. In 2016, only a single male was observed, but it was seen singing from the second week of June until the end of the month in the same location as the previous year. On 23 July 2016, a male was seen carrying food in Kugluk/Bloody Falls Territorial Park, about 13 km south of Kugluktuk. The male was observed feeding a recently fledged young (Figure S9). On 19 July 2017, a male was seen feeding a fledged young capable of sustained flight within the hamlet limits of Kugluktuk. On 24 July 2017, another

male was seen feeding a recently fledged young 30 km northeast of Kugluktuk.

Kugluktuk is the only community in Nunavut with consistent sightings of this species since at least 2003 (eBird 2017); all are believed to be of the Myrtle group, *Setophaga coronata hooveri*. Previous recordings are known from the James Bay area, including Akimiski and smaller islands (Tymstra 1996, 1997), as well as in the Nueltin Lake area (Harper 1953; Mowat and Lawrie 1955). The first eBird records for Kugluktuk are of two birds (sexes not mentioned) on 11 June 2003, a single bird on 28 June 2013, and three birds (sexes not mentioned) in the adjacent Richardson River Valley on 13 August 2010. The records described here are believed to be the first confirmed breeding evidence for Nunavut.

DARK-EYED JUNCO (*Junco hyemalis*)

I observed an adult carrying food and subsequently feeding a recently fledged juvenile on 24 July 2018 at the confluence of Melville Creek and the Coppermine River (Figure S10). Habitat conditions were similar as those described for Canada Jay. The record described here is believed to be the northernmost confirmed breeding evidence for the territory.

BARN SWALLOW (*Hirundo rustica*)

A pair was observed in Kugluktuk for two consecutive breeding seasons, on 30 May 2015 and 13 June 2016. On 19 July 2015, a pair was observed near an unoccupied building within the hamlet limits. The pair began alarm calling as I approached and was later seen carrying insects. On 19 June 2016, a pair was seen collecting mud within the hamlet limits. No observations were made of this species in 2017–2018; however, survey effort was minimal compared with 2015 and 2016.

Many Barn Swallows have been seen in the Canadian Arctic (eBird 2017), but only one confirmed nesting exists for Nunavut: on a tower on Akimiski Island in July 1999 (K. Abraham unpubl. data). Late nest construction was observed in Arviat on 6 August 2008 (Eckert 2009) and a pair was seen in Rankin Inlet in 2016 (eBird 2017), but otherwise no confirmed nesting has been reported on the mainland portion of the territory. Further study in the Kugluktuk area may lead to eventual nesting detection. The records described here are believed to be the northernmost evidence for suspected breeding in the territory.

BOHEMIAN WAXWING (*Bombycilla garrulus*)

I observed what is believed to have been a pair within the hamlet limits of Kugluktuk on 23 June 2018 (Figure S11). They were feeding on Black Crowberry (*Empetrum nigrum* L.) from the previous season. Playback calls were made which generated minor response. It is likely that these birds overshot their migration past the treeline ~40 km south which would have provided suitable breeding habitat. An earlier observation from Kugluktuk was made between 19 July to 6 August 1989, however this was a single bird (Richards and Gaston 2018). This is believed to be the northernmost record

of a pair in suitable habitat for the territory and breeding in this region is highly suspected.

WHITE-THROATED SPARROW (*Zonotrichia albicollis*)

I documented multiple singing males of this species on 24 July 2018 near the confluence of Melville Creek and the Coppermine River. Habitat conditions were similar to those described for Canada Jay. Calling males were in suitable habitat and breeding was highly likely. A male specimen from Kugluktuk (Richards and Gaston 2018) was collected by F.W. Schueler in 1975. This area likely represents the northernmost extent of potential breeding for the territory.

PINE GROSBEAK (*Pinicola enucleator*)

I documented a singing male on 24 July 2018 (Figure S12) near the confluence of Melville Creek and the Coppermine River. Habitat conditions were similar to those described for Canada Jay. The bird was in suitable habitat and appeared to be moulting. The record described here is believed to be the northernmost evidence for suspected breeding in the territory.

BALD EAGLE (*Haliaeetus leucocephalus*)

Two adult Bald Eagles, believed to be a pair based on courtship pursuit flights, were documented near the mouth of the Coppermine River and in Kugluk/Bloody Falls Territorial Park for the 2015–2016 breeding seasons. Territorial chasing between these two birds and a resident breeding pair of Golden Eagles (*Aquila chrysaetos*) was observed on multiple occasions, although no nests of Bald Eagles were located. Additional observations of both adult and sub-adult Bald Eagles were made in late July 2017 in both Kugluk/Bloody Falls Territorial Park and near the mouth of the Rae River.

A review of unpublished data from the jointly managed Government of Northwest Territories and Nunavut/NWT Raptor Database (2017) revealed a single record of a Bald Eagle sitting on a nest approximately 3 km southeast of Bloody Falls on 8 May 1993. In 2017, the same site was found to be an occupied Golden Eagle territory. Local ecological knowledge suggests that this species has been regularly occupying this region for nearly a decade and an experienced local resident has suggested that a pair's nest was removed during deactivation of a Distant Early Warning radar tower at Cape Young (Pin-2, 68.935°N, 116.936°W) in the mid 2000s, 150 km northwest of Kugluktuk (A. Niptanatiak pers. comm. 20 July 2018). Over the last several years, irruptive behaviours have been documented for this species in the Queen Maud Gulf (K. Drake pers. comm. 15 August 2016), and further surveys in this area will likely result in additional breeding records. The previously unpublished record from 1993 represents what is believed to be the first breeding record for the territory.

Conclusion

Whether breeding of the described species in the western Kitikmeot has occurred relatively recently as a result of climatic shifts or has simply been undetected

because of a paucity of surveys remains unknown. Avian species ranges are known to be highly dynamic and subject to influence from both climatic and local environmental factors (Parmesan 2006; Virkkala *et al.* 2008, 2010, 2014). The proximity of Kugluktuk and the western Kitikmeot to the boreal–taiga transition zone means that this region likely falls within the northern range limit for a number of both bird and mammal species. This location is also known to harbour vagrants, such as Townsend's Solitaire (*Myadestes townsendi*; Lamont and Knaggs 2016), and previous suspected breeding of this species was confirmed in 2017 near Behchokoq, approximately 50 km northwest of Yellowknife (L. McLeod pers. comm. 6 July 2017).

Similarly, the vascular plant biodiversity is among the richest in Nunavut, with 14 taxa in Kugluk/Bloody Falls Territorial Park not found elsewhere in the territory (Saarela *et al.* 2017). Beyond aerial surveys for raptors and waterfowl (Bromley and McLean 1986; Shank 1996; Conant *et al.* 2007; Lamont *et al.* 2016, 2018), possibly no formal efforts have been made to document passerine diversity. Given that my observations were all collected in a highly localized area, with most travel on foot, more intensive surveys would likely yield additional species previously unrecorded for the region or, potentially, the territory. Those conducting surveys in Nunavut should submit their observations to eBird (www.ebird.com) as recommended by Environment and Climate Change Canada to help define breeding ranges or species previously unknown to breed in the territory.

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SUPPLEMENTARY MATERIAL:

- FIGURE S1.** Female American Wigeon (*Anas americana*) with young brood on a small pond near Kugluktuk.
- FIGURE S2.** Female Mallard (*Anas platyrhynchos*) with duckling at edge of small pond near Kugluktuk.
- FIGURE S3.** Northern Shoveler (*Anas clypeata*) nest found in a sedge meadow near Kugluktuk.
- FIGURE S4.** Green-wing Teal (*Anas carolinensis*) duckling near Kugluktuk.
- FIGURE S5.** Greater Scaup (*Aythya marila*) nest in a sedge meadow near Kugluktuk.
- FIGURE S6.** Says Phoebe (*Sayornis saya*) nest under rock overhang near Kugluktuk.
- FIGURE S7.** Juvenile Canada Jay (*Perisoreus canadensis*) near Melville Creek south of Kugluktuk.
- FIGURE S8.** Recently fledged Grey-cheeked Thrush (*Catharus minimus*) near Melville Creek, south of Kugluktuk.
- FIGURE S9.** Male Yellow-rumped Warbler (*Setophaga coronata*) with recently fledged juvenile, Kugluk/Bloody Falls Territorial Park south of Kugluktuk
- FIGURE S10.** Dark-eyed Junco (*Junco hyemalis*) carrying insects near Melville Creek, south of Kugluktuk.
- FIGURE S11.** Bohemian Waxwing (*Junco hyemalis*) seen within the hamlet of Kugluktuk in June 2018.
- FIGURE S12.** A male Pine Grosbeak (*Pinicola enucleator*) singing near Melville Creek, south of Kugluktuk.