

# NORTHERN FLYING SQUIRRELS IN THE BATTLEFORDS REGION, SASKATCHEWAN: RARE OR LOCALLY DISTRIBUTED?

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*The shy and nocturnal habits of the Northern Flying Squirrel make it appear scarce and even rare. This is not the case over most of the range, although it is usually well dispersed and seldom abundant. Populations are often common in well-forested areas in cities and towns without residents knowing of their presence.*

— Donna Naughton in *The Natural History of Canadian Mammals* (2012)

## Introduction

In *A Guide to Saskatchewan Mammals*, Beck plotted the available records of the Northern Flying Squirrel (*Glaucomys sabrinus*), suggesting a distribution restricted primarily to the “wooded areas of northern Saskatchewan.”<sup>1</sup> The Battlefords area was not among those localities<sup>1</sup>, but knowledge of the distribution of mammals in the province was sparse at that time. Observations and collections of mammals made while I was a high school student in Battleford from 1958 to 1961, followed by additional bouts of collecting in subsequent decades, confirmed this species’ rarity in this area of the aspen parkland. One specimen was recorded on 18 August 1961 — a male killed by a cat on the farm of the late Richard Johnson, located on the northern edge of Winniford Lake (N52.681939°, W108.42545°), about 8 km south of Battleford.<sup>2</sup> The skin and skull were preserved in the mammal collection of the Saskatchewan Museum of Natural History (now Royal Saskatchewan Museum) as RSKM\_MAMM\_M-1464. Johnson had not encountered this species during 35 years of farming in the area, nor had several other long-time residents in the area whom I contacted. I wondered, naively in retrospect, whether this individual had “wandered down

from the north.”<sup>2</sup>

Four years later, with additional records of Northern Flying Squirrels in Saskatchewan compiled during a study of the species’ ecology<sup>3</sup>, Davis noted that the Battleford specimen remained the only one collected outside the Canadian Life Zone, although he acknowledged an observation of a flying squirrel in the Moose Mountain area of southeastern Saskatchewan.<sup>4</sup> In an editor’s note appended to Davis’s article<sup>5</sup>, however, Nero mentioned two overlooked specimens: a mounted specimen, captured in a weasel trap in aspen parkland near Punnichy on 21 December 1956, and one collected at Carlyle in 1926. The latter specimen cannot be located, but it may be RSKM\_MAMM\_M-624, which was taken at Carlyle on 14 March 1927 (Appendix I). An undated specimen (RSKM\_MAMM\_M-1010) collected in Moose Mountain Provincial Park is possibly the one to which Beck<sup>2</sup> and Soper<sup>6</sup> referred.

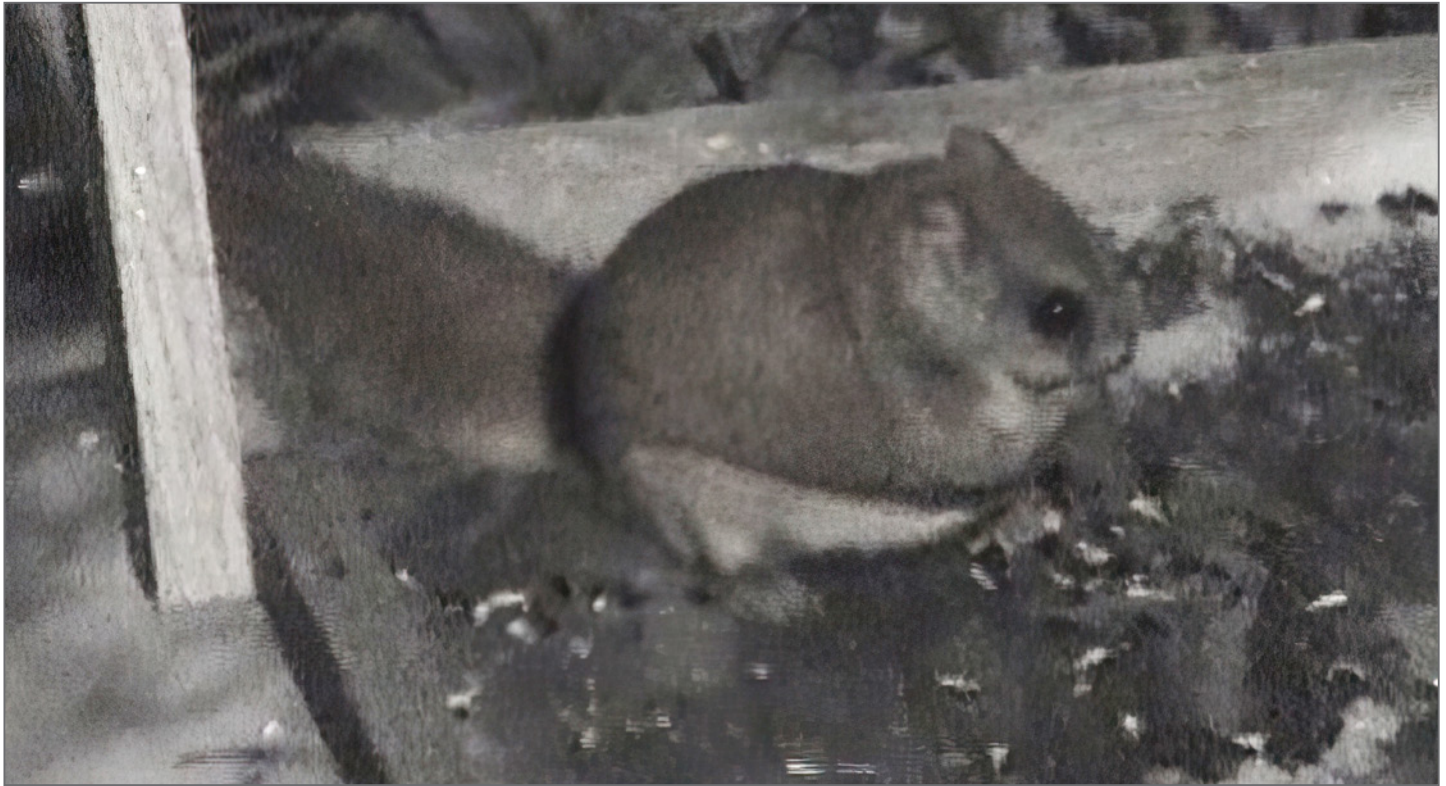
As noted by Naughton, the nocturnally active Northern Flying Squirrel is infrequently observed<sup>7</sup>, but if present or even locally distributed in the Battlefords area, it should have been recorded during extensive trapping of small mammals and fur-bearers I conducted during all seasons and in all habitats from 1958 to 1961, and intermittently in subsequent decades. Collections were made in response to Beck’s plea for additional specimens to extend knowledge of the distribution of Saskatchewan mammals.<sup>1</sup> No flying squirrels were taken, however, and the cat-killed specimen remained the only record from the Battlefords area. Commercial trappers elsewhere in Saskatchewan have complained about flying squirrels entering traps set for commercially valuable species.<sup>5,8</sup>

Trapping is not the only means of determining the presence of a seldom-observed species such as the

Northern Flying Squirrel. This may be accomplished by dissection of the contents of pellets cast by roosting Great Horned Owls (*Bubo virginianus*), a method dubbed more effective for broad-scale studies of small mammals than conventional trapping.<sup>9</sup> The first record of Preble’s Shrew (*Sorex preblei*) for Saskatchewan was based on a mandible dissected from an owl pellet.<sup>10</sup> Prey dissected from Great Horned Owl pellets by Raymond Poulin and colleagues at the Royal Saskatchewan Museum yielded remains of 859 individuals of 13 species of small mammal, but Northern Flying Squirrel was not among them.<sup>11</sup> Northern Flying Squirrels were not among prey remains recorded in 210 Great Horned Owl nests visited for banding in different parts of the province in 2008<sup>12</sup>, and I did not record the flying squirrel as prey in more than three dozen nests visited for banding south of Battleford between 1960 and 1962. Despite the flying squirrel’s agility, it has been reported to be taken as prey by owls elsewhere.<sup>13</sup> Nevertheless, the question remained: is the Northern Flying Squirrel rare in the Battlefords area, or locally distributed, possibly reflecting low population densities in Saskatchewan?<sup>14,15</sup>

## Recent observations

Is the Battleford record an outlier, something that would be considered a vagrant if it had been a bird? Possibly not, because among reports of Northern Flying Squirrels on Christmas Mammal Counts (CMCs) conducted in Saskatchewan, several were submitted by Bev and Orval Beland of flying squirrels observed on their property 6 km south of Denholm from 2010<sup>16</sup> through 2023.<sup>17</sup> Aided by a yard lamp, which the squirrels generally tolerated, regular observations were made of one or two flying squirrels that fed and interacted at a suet feeder and sunflower seed feeders (Figure 1) placed near



**FIGURE 1.** Northern Flying Squirrel at sunflower seed feeder, 21:00 h, near Denholm, 7 December 2010. Photo credit: Orval Beland.

their home in an aspen bluff, north of the North Saskatchewan River, about 27 km southeast of North Battleford. Although they had observed visitors to their feeders since prior to 2000, the first flying squirrel was observed on 13 November 2010. Usually one flying squirrel, but sometimes two, intermittently fed at the feeders, or sought refuge in a nearby shed and among trees in all seasons through winter 2023-24. Excerpts from their field notes, accompanied by intuitive inferences about the squirrels' behaviour, were extracted (Table 1), which augment information on the natural history of this species in Saskatchewan. These observations confirm the occurrence of flying squirrels at this site in aspen parkland.

## Discussion

The cat-killed Northern Flying Squirrel salvaged south of Battleford in 1961 remains the only record from that locality, south of the North Saskatchewan River. Observations north of the North Saskatchewan River made since prior to 2000, however, suggest the establishment of a small population near Denholm within the last 15 years.

Further observations are required to confirm whether this species has expanded its range more broadly in the aspen parkland, or whether these flying squirrels represent a local population. Previous compilations of records portray the Northern Flying Squirrel's range in Saskatchewan as generally falling outside the aspen parkland<sup>2,4</sup>, and this species was not mentioned in Bird's comprehensive study of the ecology of the aspen parkland in western Canada, as were other species that regularly occur there.<sup>18</sup>

The juvenile flying squirrel observed at a feeder in July provided the only direct evidence of reproduction, and jives with the breeding schedule of this species described for Saskatchewan, with young born during late April or early May.<sup>3</sup> A flying squirrel found in a nest box in May 2021 suggested the presence of a litter, but this was not confirmed. This was the only nest box that showed signs of occupancy by flying squirrels, despite the availability of other nest boxes in the vicinity. Having cleaned nest boxes each year for more than 20 years, Orval Beland recognized the uniqueness of the contents of the above box compared with those used with varying regularity by

Tree Swallows (*Tachycineta bicolor*), House Wrens (*Troglodytes aedon*), Mountain Bluebirds (*Sialia currucoides*), House Sparrows (*Passer domesticus*) and mice. Presumably, squirrels roosted and, if breeding, reared young in abandoned woodpecker holes or in natural cavities, but adult squirrels, usually by themselves were observed at feeders during all seasons. At Emma Lake, Davis speculated that flying squirrels sought food in his cabin in winter, undaunted by the presence of a lantern, and probably nested in nearby snags or woodpecker holes, whereas other individuals nested in cabins, but moved outside in early spring.<sup>3</sup>

The Northern Flying Squirrel generally has been recorded during CMCs at one or two localities in Saskatchewan each year, including at Denholm over the last 15 years, despite the species' broad distribution in the boreal forest. Exceptional in this regard, however, were five flying squirrels recorded on the count at Greenwater, four at Grenfell and three at Kinloch during the 2023 count period.<sup>17</sup> That flying squirrels are active predominantly at night probably renders them unseen by most observers, but if present in an area, their tracks in

YEAR	DAY	NOTES AND COMMENTS
2010	13 November	05:00 h: single flying squirrel observed for first time at suet feeder... not encountered before by Beland or any member of his family or friends, despite growing up on a nearby farm
	18 November	04:45 h: fed on suet and sunflower seeds for about 15 minutes... large, dark eyes, short, pugnose face visible, skin flap connecting front and rear legs... glided for short distances between feeders and trees (6 or 7 feet)
	2 December	Usually single, occasionally two flying squirrels attended feeders most nights throughout remainder of the year, a pattern maintained through the end of observations (see Figure 1)
	30 December	23:30 h: two individuals on feeder, but one jumped to the ground and ran off
2011	11 March	23:00 h: Great Horned Owl attempt to capture flying squirrel; owl focused on open hut to which the squirrel usually glided when it left feeder; outcome of encounter not determined, but by 07:30 h the next morning, sunflower seeds were shelled, which suggests squirrel survived
	20 July	After 24:00 h: first observation of juvenile, this one a "¾-grown" squirrel at feeder for about 20 min during a thunderstorm
	22 August	Squirrel visits feeders every night
2013	28 January	19:30 h: only visit to feeder by three flying squirrels
	13 May	First squirrel at feeder in six nights, longest gap in 2½ years; feeding less, tending young?
	31 May	Squirrel regular again, after mid-May absence
	21 September	10:00 h: at feeder during daylight, again on 23 September
2014	31 August	Chipmunks all day, every day; flying squirrel every night
2016	1 September	Visited every night since sunflower seed feeder moved several weeks ago
	7 October	Visited feeder during snow storm
	8 December	Seed source attended regularly by flying squirrel, Downy and Hairy woodpeckers, Black-capped Chickadee, and Snowshoe Hare; Ermine(s) also seen near feeder
2019	19 February	21:00 h: at feeder, did not flush when Beland walked by the feeder
2020	21 October	Only observation of tracks in snow, for hundreds of yards... skin flap (patagia) left marks in the powdery snow
2021	23 February	05:00 h: on feeder, tolerated Beland's presence as a new and adjacent feeder was hung
	17 May	Flying squirrel in nest box erected for Saw-whet Owls ( <i>Aegolius acadicus</i> ); young not confirmed. Only record of nest box use by a flying squirrel, despite many nest boxes available. Contents removed from this box on 13 March 2022 contained "soft hay and fine fibres", unlike contents removed from boxes over 20 years. Daytime roost sites not determined
2022	18 March	05:30 h: left feeder, rapidly climbed three trees in succession, gliding from tree to tree
2023	9 April	Absent through 27 April, the longest (and unexplained) absence between recorded visits to feeders since observations began. On this date, sunflower seeds were eaten from a basket, but 'preferred' feeder was untouched until 19 May (different flying squirrel?)
	7 September	Flying squirrel killed by a cat at neighbour's property 1.6 km south on edge of the North Saskatchewan River valley
	8 December	One flying squirrel fed on corn scattered on the ground for Snowshoe Hares ( <i>Lepus americana</i> )

**TABLE 1.** Observations of Northern Flying Squirrels, made with the aid of floodlights, extracted from Orval Beland's field notes, 6 km south of Denholm, Saskatchewan, 2010 to 2023. References are to single Northern Flying Squirrels, unless otherwise noted.

snow should alert observers — that is, if they regularly venture to the ground in winter, and whether observers can distinguish their tracks from those of the Red Squirrel (*Tamiasciurus hudsonicus*)<sup>19</sup>, which is not always the case. The Belands observed flying squirrel tracks in the snow only once, following a snowfall in the Denholm area in late October 2020 (Table 1). The squirrels moved between feeders and outbuildings and among trees, all above ground. Nevertheless, flying squirrels have been reported on CMCs in Saskatchewan based on diggings (e.g., Turtleford)<sup>20</sup> and tracks in the snow (e.g., Christopher Lake)<sup>21</sup>, and pre-dating CMCs, sliding in the snow.<sup>22</sup> Images derived from motion-activated trail cameras<sup>24,25</sup> may be used to augment some of these observations.

## Acknowledgements

It is a pleasure to acknowledge Bev and Orval Beland's diligence in observing and recording nature, and for permission to extract excerpts from their detailed notes on flying squirrels observed at and near feeders at all hours of the day. Their observations continue. To update the list of specimens and collecting localities of Northern Flying Squirrels in Saskatchewan, I thank museum personnel for checking the collections under their care: Anna Chinn (Royal British Columbia Museum), Danae Frier (Royal Saskatchewan Museum), Jocelyn Hudon (Royal Alberta Museum), Burton Lim (Royal Ontario Museum), Tracy Marchant (University of Saskatchewan Biological Museum), Randle Mooi (Manitoba Museum), and Gregory Rand (Canadian Museum of Nature).

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**APPENDIX 1.** Specimens of Northern Flying Squirrel collected in Saskatchewan that were overlooked, or not yet catalogued in museums, in Beck's<sup>2</sup> initial compilation of records and Davis's<sup>4</sup> update; also included are specimens collected since those updates were published.

### Canadian Museum of Nature (CMNMA)

CMNMA 17237: Bjorkdale, October 1942.

CMNMA 19517-21: Flotten Lake, 26, 27 July and 4 August 1948. Specimens were collected during a faunal survey at Flotten Lake by the (now) Canadian Museum of Nature led by W. Earl Godfrey during summer 1948.<sup>23</sup>

CMNMA 52458-59: McLennan Lake, 12 June 1978; Montreal River, 3 July 1978.

### Royal Saskatchewan Museum (RSKM\_MAMM\_M)

RSKM\_MAMM\_M-624: Carlyle, 14 March 1927; a specimen noted by Nero<sup>5</sup> taken by a different collector at Carlyle in 1926 is not catalogued in the RSM.

RSKM\_MAMM\_M-724: Arborfield, 22 November 1941.

RSKM\_MAMM\_M-924-26: Wapati Lake, 29 March 1952.

RSKM\_MAMM\_M-1644: Okla, December 1995.

RSKM\_MAMM\_M-1652: Hazel Dell, January 1999.

RSKM\_MAMM\_M-3420, 3498: Candle Lake, 24 January 2009.

### The Manitoba Museum (MM)

MM 3418: Amisk Lake, 4 September 1971.

### University of Saskatchewan Biological Museum (USBM-M)

Davis augmented this collection during research focused on the breeding ecology of the Northern Flying Squirrel conducted primarily out of the University of Saskatchewan's Biological Station at Emma Lake, 1960-61<sup>3,4</sup>; most specimens were collected at Emma Lake, but also at Candle Lake, La Ronge and Stony Rapids. 🐿

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