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ABSTRACT.—Researchers banded 4439 Northern Saw-whet Owls (*Aegolius acadicus*) during autumn at 10 migration-monitoring stations between 2002 and 2007 in Alberta and Saskatchewan, Canada. Sixty-one recaptures of live birds or recoveries of dead birds (together termed ''encounters'') banded at these stations and recaptures at these stations of birds banded elsewhere occurred during this period. The farthest saw-whet owl encountered was 2315 km from the banding station (Last Mountain Lake, Saskatchewan, to Hebron, Pennsylvania). Almost half of the encounter locations were east or southeast of the associated banding site. The overall average speed of within-season travel was 37 km/night; however, the average speed of eastward movements was 81 km/night ($n = 9$). Of 19 within-season (mid-August to mid-December) encounters, hatch-year females ($n = 11$) travelled farther (615 km ± 464.9) than after-hatch-year females ($n = 5$; 110 km ± 33.6; $P = 0.047$). Three owls apparently overwintered in Alberta and Saskatchewan. During the nonbreeding season, saw-whet owls in Alberta and Saskatchewan may employ more than one movement strategy, including migration, overwintering in the region, and possible nomadism, which suggests that the species is a variable partial migrant. Birds banded at Alberta stations had more southward encounters than those banded at Saskatchewan stations, which were encountered mostly to the southeast, suggesting that autumn movements of saw-whet owl are influenced by the presence of suitable forested habitat.

KEY WORDS: *Northern Saw-whet Owl*; Aegolius acadicus; *banding*; *encounters*; *migration*; *nomadism*; *overwintering*.

ENCUENTROS CON INDIVIDUOS DE *AEGOLIUS ACADICUS* ANILLADOS EN ESTACIONES DE ALBERTA Y SASKATCHEWAN, CANADÁ

RESUMEN.—Entre 2002 y 2007, se han anillado 4439 individuos de *Aegolius acadicus* durante el otoño, en 10 estaciones de monitoreo de migración en Alberta y Saskatchewan, Canadá. Durante este período, se presentaron 61 recapturas de aves vivas o hallazgos de aves muertas (en conjunto llamados ''encuentros'') que habían sido anilladas en esas estaciones y también se presentaron recapturas de aves que habían sido anilladas en otros lugares. El encuentro registrado a mayor distancia fue el de un individuo ubicado a 2315 km de la estación donde fue anillado (de Last Mountain Lake, Saskatchewan, a Hebron, Pensilvania). Casi la mitad de los sitios de los encuentros se ubicaron al este o al sudeste de los sitios de anillado

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asociados. La velocidad promedio general de los desplazamientos sucedidos en una estación fue de 37 km/noche. Sin embargo, la velocidad promedio de los movimientos hacia el este fue de 81 km/noche ($n = 9$). En los 19 encuentros que tuvieron lugar en una misma estación (de mediados de agosto a mediados de diciembre), observamos que las hembras en su año de eclosión ($n = 11$) viajaron más lejos (615 km ± 464.9) que las hembras de más de un año de edad ($n = 5$; 110 km ± 33.6; $P = 0.047$). Tres individuos aparentemente pasaron el invierno en Alberta y Saskatchewan. Durante la época reproductiva, los individuos de *A. acadicus* de Alberta y Saskatchewan podrían emplear más de una estrategia de movimiento, incluyendo migrar, pasar el invierno en la región y, posiblemente, presentar movimientos nómadas. Esto sugiere que la especie es un migrante parcial variable. Las aves anilladas en las estaciones de Alberta fueron encontradas en el sur con mayor frecuencia que las anilladas en Saskatchewan, las cuales se encontraron predominantemente hacia el sudeste. Lo anterior sugiere que los movimientos otoñales de esta especie son influenciados por la presencia de ambientes boscosos adecuados.

[Traducción del equipo editorial]

Movements of banded Northern Saw-whet Owls (*Aegolius acadicus*; hereafter called saw-whets) have been monitored extensively during spring and autumn in eastern North America (Mueller and Berger 1967, Catling 1971, Holroyd and Woods 1975, Weir et al. 1980, Slack and Slack 1987, Russell et al. 1991, Duffy and Kerlinger 1992, Rasmussen et al. 2008, Brinker et al. 1997, Whalen and Watts 1999, Whalen and Watts 2002). Comparatively few such studies have been conducted in the northern and western parts of the species' range (Frye and Gerhardt 2003, Priestley and Priestley 2005).

Since 2002, researchers have established 10 new saw-whet monitoring stations in western Canada (Table 1). Autumn monitoring sites in Alberta began in 2002 at Beaverhill Lake (53°22.83′N, 112°31.63′W; Priestley and Priestley 2005). Calgary Bird Banding Society opened a site south of Bragg Creek (50°48.95′N, 114°27.88W) in 2003. In 2004, monitoring began at Lesser Slave Lake Bird Observatory (55°24.82′W, 114°48.33′W; R. Krikun pers. comm.) and at Pletz Park near Millet (53°03.20′N, 113°28.75′W; H. Pletz pers. comm.).

Autumn monitoring in Saskatchewan began at Matador (50°47.50′N, 107°53.13′W) in 2003. Last Mountain Lake National Wildlife Area (51°23.17′N, 105°10.97′W; R. Dickson pers. comm.), Langham (52°12.65′N, 106°57.35′W; M. Blom pers. comm.), and North Saskatoon banding stations (52°13.95′N, 106°41.70′W; M. Stoffel pers. comm.) began monitoring in 2004. Monitoring began in 2006 at Edenwold (50°39.48′N, 104°17.57′W; J. Clarke pers. comm.) and in 2007 at Nisbet Forest north of Prince Albert (53°17.10′N, 105°39.20′W; H. Fisher pers. comm.).

Individually marked birds allow for studies of dispersal and migration, behavior and social structure, life span and survival rate, reproductive success, and population growth. Recaptures of live banded birds and recoveries of dead banded birds (together termed ''encounters'' by the U.S. Geological Survey Bird Banding Lab and the Canadian Bird Banding Office) of banded saw-whets appear to be common in regions where banding effort is high. For example, 31 encounters of saw-whets banded at five banding stations in New Jersey, Maryland, and Virginia in 1995 (Brinker et al. 1997). In contrast, only five encounters of birds banded in Alberta were reported between 1986 and 2005 (Priestley and Priestley 2005). Those owls, all young owls banded at nest sites, were encountered in Idaho, Wisconsin, North Dakota, British Columbia, and Manitoba. The first encounters of a bird banded in Saskatchewan occurred in 2004 (S. Houston pers. comm.).

The objectives of this report are to (1) report travel distances, directions, and speeds of saw-whets banded at stations in Alberta and Saskatchewan, based on encounter data; (2) investigate age- and sex-related differences in movements; and (3) discuss possible movement strategies.

METHODS

Banders used mist nets and an audiolure to attract and capture saw-whets (Erdman and Brinker 1997). Banders banded and weighed owls, and measured unflattened wing chords and tail lengths. Owls were aged using feather generations on primaries and secondaries (Pyle 1997), and sexed using wing chord and mass (Brinker 2000).

We analyzed encounter data reported between 2002 and 2007 for saw-whets banded or recaptured in Saskatchewan and Alberta. Documented movements occurred among banding stations and between banding stations and other locations. Recaptures at the same banding locations in subsequent years also occurred. For each encounter, we compiled the following information: banding date and location, age (hatch-year [HY], second-year [SY],

Table 1. Numbers of Northern Saw-whet Owls banded at 10 autumn-migration monitoring sites in Alberta and Saskatchewan, Canada from 2002 to 2007.

STATION	YEAR	NUMBER BANDED
Beaverhill Lake, Alberta	2002	143
	2003	145
	2004	272
	2005	126
	2006	141
	2007	179
Lesser Slave Lake, Alberta	2004	91
	2005	134
	2006	200
	2007	108
Pletz Park (Millet), Alberta	2004	81
	2005	64
	2006	52
	2007	63
South Bragg Creek, Alberta	2003	52
	2004	176
	2005	205
	2006	157
	2007	147
Edenwold, Saskatchewan	2006	136
	2007	204
Langham, Saskatchewan	2004	150
	2005	195
	2006	113
Last Mountain Lake, Saskatchewan	2004	18
	2005	74
	2006	90
	2007	177
Matador, Saskatchewan	2003	26
	2004	92
	2005	52
	2006	124
	2007	147
Nisbet Forest, Saskatchewan	2007	86
North Saskatoon, Saskatchewan	2004	65
	2005	30
	2006	72
	2007	52
TOTAL		4439

after–hatch-year [AHY], after-second-year [ASY], or after-third-year [ATY]), sex, encounter location, and status at the time of the encounter (alive or dead). We compared within year HY and AHY female average encounter distances using a Mann-Whitney test. We mapped all encounter locations away from original banding sites using a Geographic Information System (Arc Map 9.3) and overlaid forest cover and mountain ranges on the maps.

RESULTS

From 2002 to 2007, 4439 saw-whets were banded at the 10 stations in Alberta and Saskatchewan (Table 1, Fig. 1). Measurement data collected at each site suggested that roughly two-thirds of captured saw-whets were females. Analyses of DNA from a sample of saw-whets captured in 2004 and 2005 at Beaverhill Bird Observatory, Lesser Slave Lake Bird Observatory, and Pletz Park confirmed 69% (n = 252) females and 31% (n = 111) males (Priestley 2008).

From autumn 2002 through March 2008, Alberta banding stations reported 33 band encounters and Saskatchewan stations reported 28 (Appendices 1 and 2, Fig. 1). Of these, 9 of 61 (15%) involved recaptures in subsequent years at the same location. Of the remaining 52 encounters, 28 (54%) were birds encountered east or southeast of the original banding location, 11 (21%) to the south or southwest, 8 (15%) to the west or northwest, and 5 (10%) to the north or northeast (Fig. 2). Birds banded at Alberta stations had more (7 of 27; 26%) encounters to the south or southwest than those banded at Saskatchewan stations (4 of 24; 17%); most of the Saskatchewan encounters were to the southeast (54%). Nineteen (19 of 61; 31%) encounters occurred within the same season (mid-August to mid-December; Fig. 1b) and were most (47%) commonly east–southeast of the original banding sites, similar to all encounters (Fig. 2). Only one within-season encounter from Saskatchewan was directly south of the banding site.

One HY saw-whet was banded at Rocky Point Bird Observatory on south Vancouver Island in 2003 and was encountered three years later 1150 km to the east at Matador, Saskatchewan (Zazelenchuk 2003, A. Nightingale pers. comm.). Three owls encountered south of Alberta apparently followed the east side of the Rocky Mountains (Fig. 1a).

The 19 within-season encounters involved 11 HY females, 1 HY male, 4 SY females, 1 ATY female, and two birds of unknown age and sex. The average straight-line distance between banding sites and encounter locations for HY females was 615 km (SD = 464.9), whereas the average for AHY females was 110 km (SD = 33.6; P = 0.047). All but three of the females moved in an easterly or southerly direction. The exceptions included two HY birds that moved short distances (both 73 km) to the northeast (60°) and one SY bird that moved west from

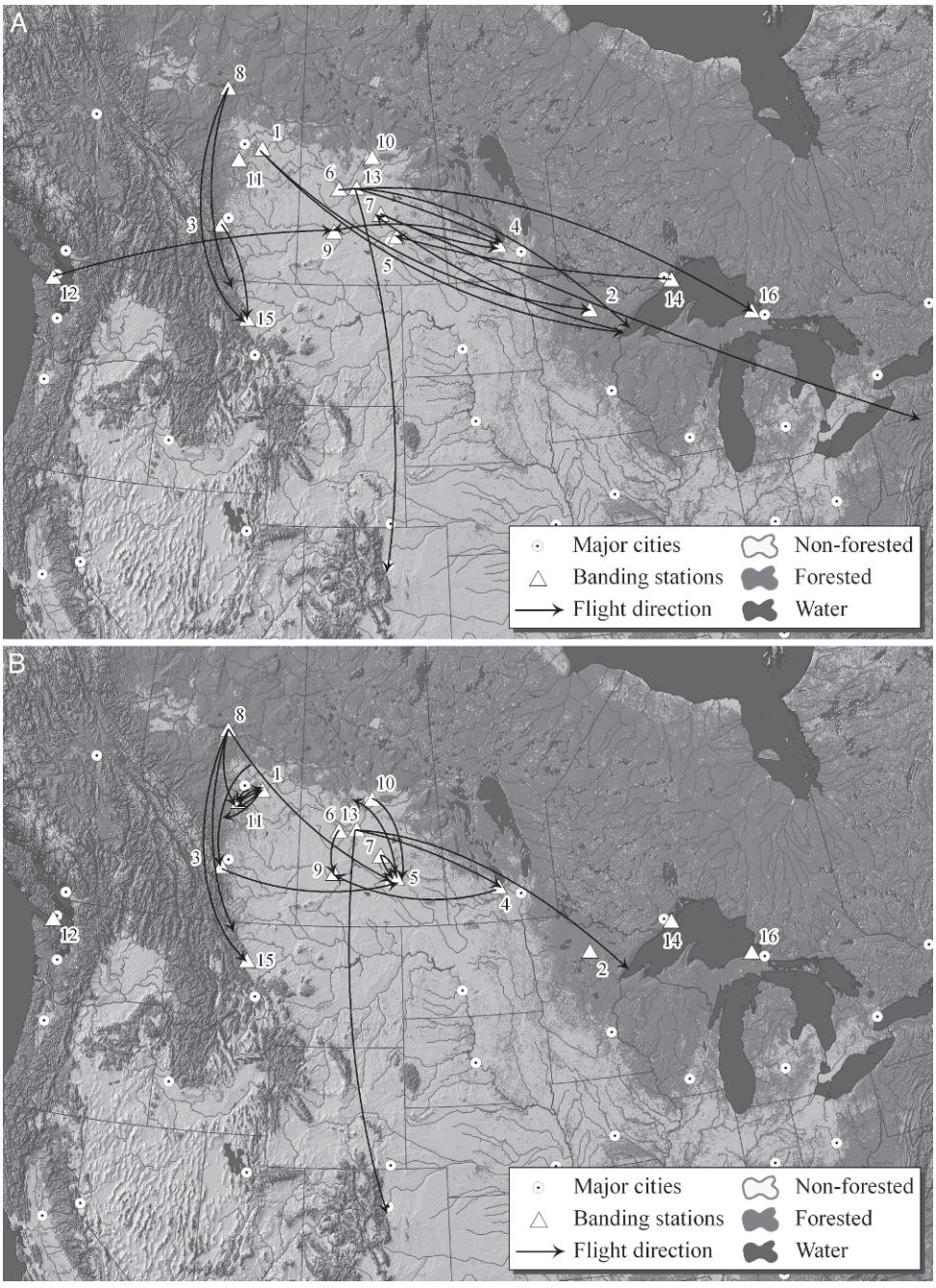

Figure 1. Locations of Northern Saw-whet Owl encounters from and to autumn-migration banding stations in Alberta and Saskatchewan, Canada. (A) Long-distance (outside banding province) encounters; (B) within-season (mid-August to mid-December) encounters only. Station locations are: 1 = Beaverhill Bird Observatory (BO), 2 = Bigfork Bird Sanctuary (BS), 3 = South Bragg Creek, 4 = Delta Marsh BO, 5 = Edenwold, 6 = Langham, 7 = Last Mtn. Lake NWA, 8 = Lesser Slave Lake BO, 9 = Matador, 10 = Nisbet Forest, 11 = Pletz Park, 12 = Rocky Point BO, 13 = North Saskatoon, 14 = Thunder Cape BO, 15 = Wind Mountain BS, and 16 = Whitefish Point BO.

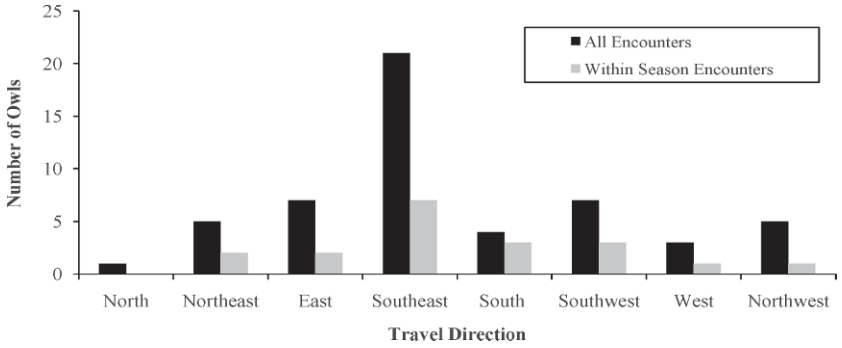

Figure 2. Directions travelled by Northern Saw-whet Owls from banding stations in Alberta and Saskatchewan, Canada, to encounter or original banding locations, highlighting within-season (mid-August to mid-December) encounters.

southern Manitoba to the Matador banding station in southwestern Saskatchewan. The single HY male moved 170 km southwest within Saskatchewan.

The greatest distance travelled by a saw-whet in our study was 2315 km from Last Mountain Lake, Saskatchewan, to Hebron, Pennsylvania, in just over one year. The farthest within-season movement was 1411 km from north Saskatoon, Saskatchewan, to Littleton, Colorado, in 69 nights. The average within-season encounter distance in our study was 467 km (SD = 418.9). The estimated average speeds at which individual owls moved within a given autumn season varied from 0.1–8.2 km/hr (average 2.9 ± 2.5 km/hr or 37 ± 33.0 km/night). The highest estimated speeds for saw-whets were: Last Mountain Lake Wildlife Management Area to Edenwold, Saskatchewan, in one night (106 km/night), Edenwold to North Saskatoon, Saskatchewan, in three nights (83 km/night), and North Saskatoon, Saskatchewan, to Two Harbors, Minnesota, in 12 nights (102 km/night).

Three encounter cases suggested that some saw-whets overwinter in Alberta and Saskatchewan. One HY female banded on 8 October 2007 at Matador was recaptured at the same site on 8 November 2007 and again on 3 January 2008. The Matador site does not appear to have suitable breeding habitat within 150 km, based on the typical breeding habitat description and breeding range maps (Smith 1996), although one saw-whet nest was found in 1969 about 16 km from Matador (B. Gehlert pers. comm.). Another HY female banded at Pletz Park on 5 November 2004 was recaptured at the same site on 16 February 2005. An ASY male captured on 22 September 2007 at Nisbet Forest was recaptured there on 14 March 2008. Both Nisbet Forest and Pletz Park contain suitable breeding habitat.

DISCUSSION

Band-recovery rates for many migrant birds tend to be low; however, as has been reported in the eastern part of its range, the number of saw-whets encountered from banding stations in Alberta and Saskatchewan was high. For example, Long Point Bird Observatory and Thunder Cape Bird Observatory reported that only 0.25% of all banded birds were encountered again, whereas 2.4% of the saw-whets banded at these sites were encountered (Mackenzie 2007). Similarly, our saw-whet encounter rate of 1.4% was much higher than the overall average for all birds reported by Mackenzie (2007), but was lower than the overall average for these eastern sites. Differences in encounter rates may be attributed to the larger size of saw-whets compared to many passerines, and/or the widespread use of the audiolure for saw-whet capture (Erdman and Brinker 1997).

Taverner and Swales (1911) first presented evidence of fall migration of saw-whets. They reported four incidents in which large numbers of saw-whets were found in autumn washed up on shores or after having landed on boats in the eastern United States. Previous encounter data indicated that saw-whets migrate in a north-south direction in eastern North America (Holroyd and Woods 1975, Brinker et al. 1997). Brinker et al. (1997) documented no encounters of banded owls north of the original banding site in autumn. Same-season encounters from Long Point Bird Observatory were in a southeasterly direction (Mackenzie 2007).

Like some insectivorous neotropical migrants that breed in western Canada (Brewer et al. 2000), a portion of the saw-whets that move through Alberta and Saskatchewan during autumn travel in a southeast direction into the midwestern United

States, according to our research. Almost half (9 of 19) of the within-season encounters from Alberta and Saskatchewan illustrated a southeasterly or easterly travel direction. By definition, migration is a massive shift of birds twice each year between regular breeding and wintering ranges (Newton 1979), but does not necessarily always involve north-south movements. The direction of movement is likely influenced by the presence of suitable habitat en route. For the saw-whet, the presence of dense vegetation for roosting and perches for foraging along migration routes may be critical (Cannings 1993). To move south efficiently while remaining near suitable habitat, saw-whets likely travel along the edges of forested habitats. Trajectories of banded and recaptured owls in Saskatchewan predominantly followed forest cover in a southeasterly direction along the southern fringes of boreal forest. Some Alberta birds followed a similar trajectory; however, three banded saw-whets were encountered in Montana south of the Alberta banding stations, which suggested that these birds followed the eastern side of the Rocky Mountains southward to remain close to available forested habitat.

Jobes (2002) reported that a migrating saw-whet traveled a straight-line distance of 71.3 km in 2.5 hr at night in Ontario, which corresponded to an average pace of 28.5 km/hr. Brinker et al. (1997) reported that one saw-whet traveled at a minimum speed of 30 km/hr, with five others traveling average distances of 13–29 km/night. Our overall average of 37 km/night was somewhat higher than the latter data, but clearly was much less than the distance traveled by the Ontario bird. Moreover, we found that saw-whets traveling eastward moved faster than those moving in other directions (suggestive of migratory behaviour) and that these owls averaged distances of 81 km/night, similar to the Ontario bird.

The movement ecology of saw-whets clearly involves a range of behaviors characteristic of partial migrants (Bildstein 2006), including true migrations of variable distances, regional residency, and possibly a degree of nomadism. Despite evidence of a strong tendency for eastward and southeastward movement patterns, many of our encounters were in other directions or at the original banding site (overwintering). Marks and Doremus (2000) first suggested that saw-whets may be nomadic based on evidence that they do not exhibit site fidelity and can be encountered far from their original breeding site. Bowman at al. (2009) recently suggested that nomadism may be employed by saw-whets during the breeding season. Using 13 yr of abundance estimates of breeding saw-whets, they found that an increase in the number of breeding owls was associated with estimates of red-backed vole (*Clethrionomys gapperi*) abundance. Swengel and Swengel (1995) found that the number of calling saw-whets followed a 4-yr cycle, yet diurnal searches for pellets, roosts, and roosting saw-whets did not indicate any pattern of annual variation. Nomadic birds drift from one area to another, inhabiting specific areas for a time wherever food is temporarily abundant (Newton 1979). Unlike the Northern Hawk Owl (*Surnia ulula*), Great Gray Owl (*Strix nebulosa*), Short-eared Owl (*Asio flammeus*), and Boreal Owl (*Aegolius funereus*; Catling 1972, Clark 1975, Bull and Duncan 1993, Duncan and Duncan 1998), saw-whet owls do not seem to exhibit ''winter invasions,'' to our knowledge. In migration, however, the relative abundance of saw-whets varies substantially from year to year (Stock 2006), which may be attributable to variation in numbers of juvenile birds (Whalen and Watts 2002).

The slowest speeds we calculated were for two birds that traveled northeast at an average pace of 6 km/night, which suggests that these owls were slowly wandering with no specific destination in mind. Other possible evidence of nomadism included a female banded at Langham, Saskatchewan in autumn 2004 and encountered at Whitefish Point in spring 2007 with a palpable egg in her oviduct. This owl may have bred north of the Langham site, moved south, and then bred in Michigan.

In our study, 64% of the encounters occurred among banding stations, which was similar to the findings of Mackenzie (2007) in northeastern North America. Another 12% of the encounters were birds banded in saw-whet nest boxes and recaptured at a banding station, or vice versa. The relatively large number of banding stations in Alberta and Saskatchewan and the presence of intensive nest-box programs in central Alberta may create a bias with regard to the geographic representativeness of encounter locations. There are only two owl banding stations west of Alberta (MacKenzie Bird Observatory and Rocky Point Bird Observatory) and four locations south of Alberta and Saskatchewan where good numbers of saw-whets have been banded (Wind Mountain Banding Station, Montana; Idaho Bird Observatory; and two HawkWatch International stations in the Manzano Mountains, New Mexico, and Goshute Mountains, Nevada), whereas there are more than 80 stations in eastern North America (see http://www.projectowlnet.org). The relative paucity of banding stations in the west, as well as generally low human population densities undoubtedly contribute to the

comparatively low numbers of encounters in this region. Human population density also is low north and northwest of Alberta, which may be the reason why few owls have been recovered in those directions.

Using only autumn banding data to understand movements of saw-whets may be problematic due to the greater proportion of females captured at banding stations. Using DNA sexing, Priestley (2008) found that two thirds of the saw-whets captured in Alberta were females, which was also true for owls captured at Long Point Bird Observatory (Mackenzie 2007). Males are thought to spend the winter at higher latitudes, stay on territory, and migrate later than females (Mackenzie 2007, C. Priestley unpubl. data). Some male saw-whets may also winter and breed in the same location (Mackenzie 2007). Mumford and Zusi (1958) also found that saw-whets may establish a winter ''territory'' and consistently use the same roosting trees. Our banding data provided further evidence of individual saw-whets that overwintered on their summer ranges; however, only one was a male (ASY), while two others were HY females. Beck and Beck (1988, 1997) also found other evidence of saw-whets overwintering in Alberta and Saskatchewan.

Although most of our band encounters suggested that saw-whets in Alberta and Saskatchewan are primarily migratory, other birds summered and wintered in the same locales, and still others exhibited possible nomadic tendencies, which together comprise classic indicators of a partial migrant. We expect that further study will help determine whether there is variation among years, what proportion of saw-whets migrate, and confirm differences between sex and age classes. For example, isotope studies using feathers have been able to answer some questions concerning the movement patterns of other raptor species (e.g., Meehan et al. 2001, Smith et al. 2003, DeLong et al. 2005) and may also prove useful to help us better understand the movement ecology of saw-whet owls (Priestley 2008). In addition, geolocators that detect changes in light levels at different latitudes and longitudes also may be an effective way to monitor saw-whet movements (S. Weidensaul pers. comm.). Although geolocators must be recovered to obtain the data they record, saw-whet recovery rates are relatively high as we, and others before us, have found.

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Appendix 1. Encounters of Northern Saw-whet Owls banded or encountered at autumn migration-monitoring stations in Alberta, Canada, from autumn 2002 to March 2008.

BANDING DATE	BAND NUMBER	AGE/SEX AT BANDING	BANDING LOCATION	ENCOUNTER DATE	STATUS	ENCOUNTER LOCATION	DISTANCE/ DIRECTION
14-Oct-02	0624-76613	HY/F[1]	Beaverhill Lake, AB	03-Feb-04	Dead	Dewberry, AB	134 km E
19-Aug-04	0764-44005	HY/F	Beaverhill Lake, AB	11-Oct-04	Live	Pletz Park, AB	73 km SW
06-Oct-04	0764-44117	SY/F	Beaverhill Lake, AB	14-Oct-05	Live	Bigfork, MN (D. Meyer)	1470 km SE
10-Oct-04	0764-44168	HY/F	Beaverhill Lake, AB	13-May-05	Live	Josephburg, AB (R. Cromie box)	50 km NW
10-Oct-04	0764-44170	SY/F	Beaverhill Lake, AB	21-Nov-04	Dead	Eckville, AB (J. Potter)	165 km SW
12-Oct-04	0764-44184	SY/F	Beaverhill Lake, AB	10-Apr-05	Dead	Duluth, MN (F. Woodke)	1625 km SE
24-Oct-04	0764-44229	HY/F	Beaverhill Lake, AB	09-May-05	Live	Ministik, AB (BBO[1] box)[2]	36 km W
11-Nov-04	0764-44284	HY/M	Beaverhill Lake, AB	04-May-05	Live	Beaverhill Lake, AB (box)	0 km
30-Sep-05	0924-21022	HY/F	Beaverhill Lake, AB	06-Oct-06	Live	Langham, SK	423 km SE
23-Oct-05	0924-21316	HY/U	Beaverhill Lake, AB	19-Oct-07	Live	Beaverhill Lake, AB	0 km
12-Sep-04	0624-94864	HY/F	Lesser Slave Lake, AB	01-Oct-04	Live	Pletz Park, AB	277 km SE
18-Sep-05	0924-23229	SY/U	Lesser Slave Lake, AB	10-Apr-07	Dead	N of Goodsoil, SK	365 km E
18-Sep-05	0924-23226	HY/F	Lesser Slave Lake, AB	11-Oct-05	Live	Wind Mtn. Banding Stn., MT	865 km S
07-Oct-05	0924-23320	HY/F	Lesser Slave Lake, AB	13-Nov-05	Dead	East Glacier, MT	750 km S
09-Sep-06	0924-23353	HY/F	Lesser Slave Lake, AB	11-Oct-06	Live	Edenwold, SK	884 km SE
23-Jun-06	0664-29584	L/U	Ministik, AB (BBO box)	03-Oct-06	Live	Pletz Park (Millet), AB	42 km SW
10-Jun-02	1204-27931	L/U	Ministik, AB (R. Cromie box)	01-Oct-04	Live	S Bragg Creek, AB	284 km SW
05-May-05	0924-21003	TY/F	Opal, AB (R. Cromie box)	03-Nov-07	Live	Beaverhill Lake, AB	107 km SE
27-Sep-05	0924-19821	HY/F	Pletz Park (Millet), AB	19-Oct-05	Live	Beaverhill Lake, AB	73 km NE
5-Oct-06	0924-23403	HY/F	Pletz Park (Millet), AB	20-Mar-07	Dead	Chaplin, SK	557 km SE
17-Oct-06	0924-23413	HY/F	Pletz Park (Millet), AB	16-Sep-07	Live	Lesser Slave Lake, AB	277 km NW
16-Oct-07	0924-23483	HY/F	Pletz Park (Millet), AB	28-Oct-07	Live	Beaverhill Lake, AB	73 km NE
31-May-07	0924-23441	ASY/F	Pletz Park nest box, AB	18-Sep-07	Live	Pletz Park (Millet), AB	0 km
24-Sep-04	1204-25371	HY/F	South Bragg Creek, AB	28-Sep-06	Live	S Bragg Creek, AB	0 km

Appendix 1. Continued.

BANDING DATE	BAND NUMBER	AGE/SEX AT BANDING	BANDING LOCATION	ENCOUNTER DATE	STATUS	ENCOUNTER LOCATION	DISTANCE/ DIRECTION
28-Sep-04	1204-23480	AHY/M	South Bragg Creek, AB	30-Sep-05	Dead	N of Bragg Creek site, AB	2 km N
4-Oct-04	1204-25322	HY/F	South Bragg Creek, AB	21-Oct-05	Live	Wind Mtn. Banding Stn., MT	362 km SE
31-Oct-04	1204-25383	HY/U	South Bragg Creek, AB	26-Oct-07	Live	S Bragg Creek, AB	0 km
18-Sep-05	0924-21506	HY/F	South Bragg Creek, AB	23-Oct-06	Live	S Bragg Creek, AB	0 km
9-Oct-05	0924-25189	HY/F	South Bragg Creek, AB	13-Oct-06	Live	Edenwold, SK	720 km E
1-Oct-06	0924-21758	HY/F	South Bragg Creek, AB	03-Oct-07	Live	Beaverhill Lake, AB	315 km NE
11-Oct-07	0924-45607	HY/F	South Bragg Creek, AB	23-Oct-07	Live	Edenwold, SK	720 km E
27-Oct-07	0924-45617	HY/M	South Bragg Creek, AB	29-Jan-08	Dead	SE Calgary, AB	47 km NE
19-Jun-05	0924-21402	L/U	Thorhild, AB (R. Cromie box)	20-Oct-05	Live	S Bragg Creek, AB	408 km S

[1] AHY = after–hatch-year; ASY = after-second-year; HY = hatch-year; L = local or nestling; SY = second-year; TY = third-year.
[2] BBO = Beaverhill Bird Observatory.

Appendix 2. Encounters of Northern Saw-whet Owls banded or encountered at autumn migration-monitoring stations in Saskatchewan, Canada, from autumn 2003 to March 2008.

BANDING DATE	BAND NUMBER	AGE/SEX AT BANDING	BANDING LOCATION	ENCOUNTER DATE	STATUS	ENCOUNTER LOCATION	DISTANCE/ DIRECTION
24-Oct-05	0604-39730	HY/U[1]	Arnold, MN (F. Nicoletti)	19-Oct-06	Live	Last Mtn. Lake NWA, SK	1078 km NW
09-Oct-07	0924-25314	SY/F	Delta Marsh, MB (DMBO)[2]	19-Oct-07	Live	Matador, SK	677 km W
24-Jul-02	1204-26041	AHY/M	Edmonton, AB (R. Cromie box)	03-Oct-07	Live	Nisbet Forest, SK	509 km E
09-Oct-06	0924-47063	HY/U	Edenwold, SK	12-Oct-06	Live	N Saskatoon, SK	248 km NW
09-Oct-04	0924-16389[3]	AHY/F	Langham, SK	16-Apr-07	Live	Whitefish Point, MI	1698 km SE
05-Oct-05	0924-11990[4]	SY/F	Langham, SK	21-Oct-07	Live	Last Mtn. Lake NWA, SK	154 km SE
16-Oct-05	1343-71945	HY/M	Langham, SK	20-Oct-05	Live	Matador, SK	170 km SW
16-Oct-05	1343-71944	HY/M	Langham, SK	18-Mar-06	Dead	SW of Langham, SK	7 km SW
23-Oct-05	0924-20487	HY/F	Langham, SK	05-Mar-06	Live	Langham, SK	0 km
28-Mar-06	0924-17818	SY/F	Langham, SK	11-Oct-06	Live	Matador, SK	170 km SW
03-Oct-06	0924-47115	SY/F	Langham, SK	23-Oct-07	Live	Last Mtn. Lake NWA, SK	165 km SE
29-Oct-05	0924-34102	HY/F	Last Mtn. Lake NWA, SK	15-Feb-06	Live	Lipton, SK	114 km SE
08-Oct-06	0924-34146	SY/F	Last Mtn. Lake NWA, SK	20-Oct-06	Live	Edenwold, SK	106 km SE

Appendix 2. Continued.

BANDING DATE	BAND NUMBER	AGE/SEX AT BANDING	BANDING LOCATION	ENCOUNTER DATE	STATUS	ENCOUNTER LOCATION	DISTANCE/ DIRECTION
12-Oct-06	0924-34151	SY/F	Last Mtn. Lake NWA, SK	13-Oct-06	Live	Edenwold, SK	106 km SE
12-Oct-06	0924-34154	HY/F	Last Mtn. Lake NWA, SK	20-Oct-07	Dead	Hebron, PA	2315 km SE
20-Oct-06	0924-34177	HY/F	Last Mtn. Lake NWA, SK	22-Sep-07	Live	Delta Marsh, MB (DMBO[2])	498 km SE
21-Oct-07	0924-11990[4]	ATY/F	Last Mtn. Lake NWA, SK	23-Oct-07	Live	Edenwold, SK	106 km SE
13-Oct-04	0924-03913	HY/F	Matador, SK	02-Oct-05	Live	S Bragg Creek, AB	450 km W
21-Oct-05	0924-17818	HY/F	Matador, SK	28-Mar-06	Live	Langham, SK	170 km SE
08-Oct-07	0924-41210	HY/F	Matador, SK	03-Jan-08	Live	Matador, SK	0 km
22-Sep-07	0924-47323	ASY/M	Nisbet Forest, SK	14-Mar-08	Live	Nisbet Forest, SK	0 km
25-Sep-07	0924-47334	HY/F	Nisbet Forest, SK	09-Oct-07	Live	Edenwold, SK	311 km SE
20-Sep-04	0924-03152	HY/F	N Saskatoon, SK	02-Oct-04	Dead	Two Harbors, MN	1227 km E
21-Sep-04	0924-03157	AHY/U	N Saskatoon, SK	11-Oct-04	Live	Delta Marsh, MB (DMBO)[2]	625 km SE
07-Oct-04	0924-03197	AHY/U	N Saskatoon, SK	22-Mar-05	Dead	Indian Head, SK	283 km SE
03-Oct-06	0904-02932	HY/F	N Saskatoon, SK	11-Dec-06	Dead	Littleton, CO	1411 km S
18-Sep-06	0924-46018	SY/M	Thunder Bay ON (TCBO)[2]	04-Oct-07	Live	Edenwold, SK	1137 km NW
27-Sep-03	1333-26241	HY/U	Vancouver Island, BC (RPBO)[2]	23-Oct-06	Live	Matador, SK	1150 km E

[1] AHY = after-hatch-year; ASY = after-second-year; ATY = after-third-year; HY = hatch-year; SY = second-year.
[2] DMBO = Delta Marsh Bird Observatory; TCBO = Thunder Cape Bird Observatory; RPBO = Rocky Point Bird Observatory.
[3] Palpable egg in oviduct.
[4] Same individual recaptured twice.