

CANADIAN PRAIRIE SHOREBIRD PROGRAM: AN UPDATE

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INTRODUCTION

In past years little shorebird population research has been undertaken in prairie Canada.

This, together with the gaining momentum of the Hemispheric Shorebird Reserve Program in North and South America (see Myers 1987a, 1987b, and Hicklin 1988, this issue), lead to the initiation of a prairie shorebird program. The Canadian Wildlife Service initiated such a program in the latter part of 1986, which included aerial shorebird surveys in 1987 throughout the southern half of the three prairie provinces of Alberta, Saskatchewan and Manitoba (Figure 1). These surveys attempted to define the number of shorebirds using the prairies during spring and fall migration, and to identify major staging areas.

As an extension of the International Shorebird Survey Program, a volunteer network of ground data collectors was also created in 1987. Over 200 information packages and data sheets were sent out to potential participants throughout prairie Canada. As the results of this program are only now coming in, they cannot be presented in this paper.

The preliminary results from aerial surveys show that two sites in southern Saskatchewan are worthy of Hemispheric Reserve status (250 000 birds or 30% of flyway population). At least four additional sites support populations of Regional Reserve levels (20 000 birds or more). Two of these "Regional" sites are in Alberta, with single sites in Manitoba and Saskatchewan.

METHODS

Survey methods involved the use of a Cessna 172RG Cutlass aircraft flown at a height of 25 m, with two observers on one side of the aircraft. All our observations were recorded into hand-held tape recorders. Birds were identified to species whenever possible, or were classed into groups based on their size (i.e. medium, small or large shorebirds). Each water body was divided into sections to assist separation of the data into manageable units. Ground data collected at some sites in conjunction with aerial surveys enabled further definition of species composition of birds in a given area.

RESULTS AND DISCUSSION

Saskatchewan

Chaplin Lake and Old Wives Lake, which were both surveyed on 24 May 1987, had by far the largest numbers of staging shorebirds of any waterbodies in the prairies.

Chaplin Lake is a large (approximately 6 360 ha) intermittent saline lake which is naturally broken into a number of sections by a series of dykes and roads (Figure 2). A total of 64 446 shorebirds were estimated for Chaplin Lake on 24 May. Ground surveys conducted on the same day enabled us to identify 63 155 of these birds to species. Table 1 presents the results of Chaplin Lake surveys which take into account ground results from sections A, B and L. In sections A and B combined, 48% of the birds

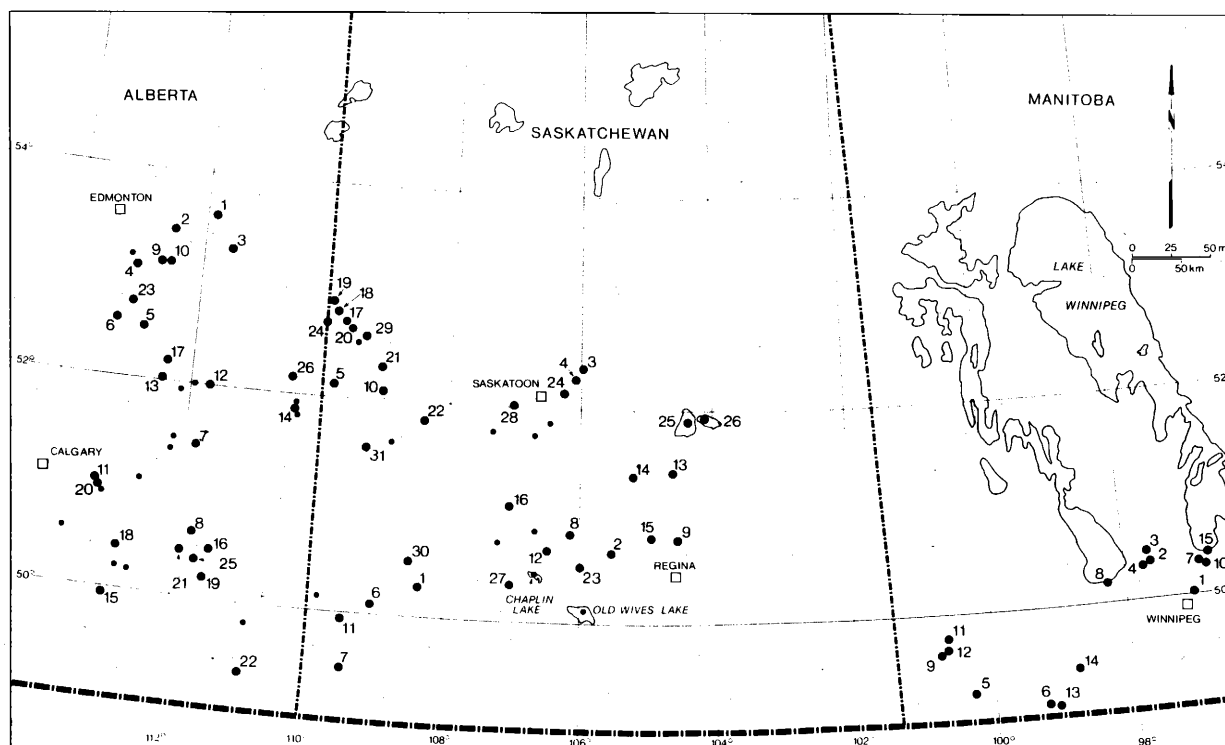


Figure 1. Aerial survey sites in Alberta, Saskatchewan, and Manitoba conducted between 21 May and 29 May 1987. Numbered sites (e.g. 05) are referred to in Tables 3, 4, and 5 depending on the province; unnumbered sites (.) are those where <100 birds were observed.

Table 1. Shorebird aerial survey results of Chaplin Lake conducted on 24 May, 1987

SPECIES	Number of Birds Observed by Lake Section													TOTAL
	A*	B*	C	D	E	F	G	H	I	J	K	L*	M	
American Avocet		4		2			1	50	53	63	50	12	4	239
Marbled Godwit								1	7	3	12	16	5	44
Killdeer											16	3	2	21
Red Knot	70	279												349
Red-necked Phalarope		10										20		30
Wilson's Phalarope		4								21	1	2	2	30
Black-bellied Plover		1								23		16		40
Sanderling	2800	11144												13944
Baird's Sandpiper	3360	13373												16733
Semipalmated Sandpiper	700	2790										100		3590
Stilt Sandpiper		21										800		821
White-rumped Sandpiper	65	140										200		405
Willet								9		11	18	16	36	90
Shorebird - large								20	13		15	6	15	69
Shorebird - small/medium								10	5	185	93		53	346
Shorebird - unidentified	5	134	3910	8906	1160	4700	7500	221	256	388	148	140	173	27641
TOTAL	7000	27900	3910	8908	1160	4700	7501	311	334	694	353	1331	290	64392

*Ground surveys conducted: results of aerial/ground analysis presented here.

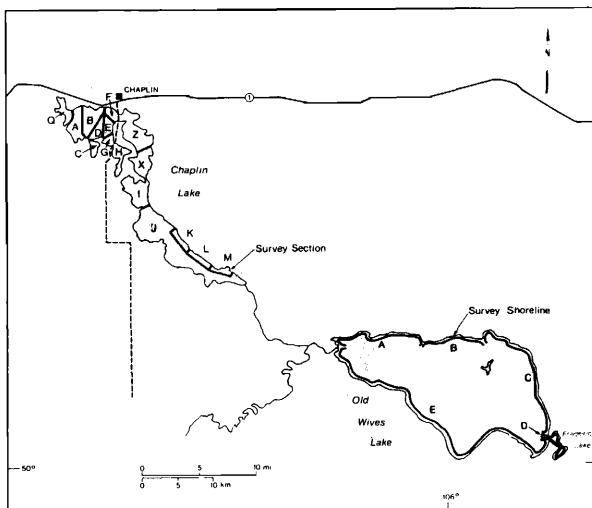


Figure 2. Location of transect section surveyed by air on Chaplin and Old Wives Lakes, Saskatchewan on 24 May 1987.

seen were Baird's Sandpipers *Calidris bairdii*, with the remainder consisting of Sanderlings *Calidris alba* (40%), Semipalmated Sandpipers *Calidris pusilla* (10%), Red Knots *Calidris canutus* (1%), and White-rumped Sandpipers *Calidris fuscicollis* (0.5%).

If the ground survey results are extrapolated across the whole lake for all sections (excluding sections K, L and M which were different habitats), there would have been 24 840 Sanderlings and 29 808 Semipalmated Sandpipers on Chaplin Lake on 24 May.

Old Wives Lake, a large (approximately 33 020 ha) intermittent saline lake, is located approximately 15 km southeast of Chaplin Lake (Figure 2). A total of 59 773 shorebirds were estimated from the air (Table 2). Ground surveys could only be conducted on Section D of Old Wives Lake. We found that 48% of the birds were Sanderlings and 48% were Semipalmated Sandpipers along with some other species (Table

2, Section D). If the ground results for Section D are indicative of species composition on the remainder of Old Wives Lake (the habitat in both section D and other sections are similar), then there were approximately 26 814 Sanderlings and the same number of Semipalmated Sandpipers on Old Wives Lake on 24 May.

There is some evidence to suggest that our estimates of Sanderlings for Old Wives and Chaplin Lakes (51 654 Sanderlings in total) are accurate and that these lakes may possess up to 50% of the Chilean and Peruvian wintering populations of Sanderlings (J.P. Myers, R.I.G. Morrison, pers. comm.). In addition, a portion of the Californian wintering population of Sanderlings may also have been present here. Future work on these lakes will attempt to address the source of these birds through band recoveries.

A total of 41 waterbodies were surveyed in Saskatchewan between 24-26 May 1987, 18 of which had fewer than 500 shorebirds and nine had fewer than 100 birds. A detailed breakdown of species observed in each lake is presented in Table 3 (lakes with 100 birds or less are grouped).

Five lakes contained particularly large numbers of birds. These are Buffer Lake (10 672), Grill Lake (13 588), Manito Lake (28 702; 26 520 of which were Red-necked Phalaropes *Phalaropus lobatus*), Muddy Lake (13 588), and Reed Lake (6 603). The majority of these birds are most likely Semipalmated Sandpipers, although ground surveys in future years will be needed to confirm species composition and numbers for all sites.

Saskatchewan had by far the highest numbers of shorebirds recorded in the prairie provinces with a total of 240 879.

Alberta

We surveyed 43 waterbodies in Alberta between 21 and 23 May 1987. Data are not available for three of these lakes (Kimiwan, Killarney, and Lean Lakes) and therefore do not appear in the results presented in Table 4. Kimiwan Lake did, however, have over 20 000 shorebirds on it when surveyed on 15 May 1987. Thirteen of the lakes had fewer than 100 birds.

Table 2. Shorebird Aerial Survey Results of Old Wives Lake conducted on 24 May, 1987

SPECIES	Number of Birds Observed by Lake Section				TOTAL
	A	C	D*	E	
American Avocet	171			384	555
Marbled Godwit				3	3
Red Knot			20		20
Piping Plover			1		1
Sanderling			1541		1541
Baird's Sandpiper			54		54
Semipalmated Sandpiper			1541		1541
White-rumped Sandpiper			53		53
Willet				1	1
Shorebird - large	2		30	110	142
Shorebird - small/medium	990			50	1040
Shorebird - unidentified**	21780	10242		22800	54822
TOTAL	22943	10242	3240	23348	59773

* Frederick Lake

**at least 80% are small to medium shorebirds

Table 3. Shorebird aerial survey results of waterbodies surveyed in Saskatchewan between 24 and 26 May 1987.

SPECIES	Number of Birds Observed by Lake																Manito Lake Area			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
American Avocet	62	5	29		18	77	3	13		141	27	4	438	63	1		15			7
Dowitcher - unidentified					2															
Hudsonian Godwit																				
Marbled Godwit	2	1			4	9	1	7	10			3	2	18	5					9
Killdeer	1	3				7	8	4	1		1	2	1	2	8	9				3
Red-necked Phalarope																				3
Wilson's Phalarope																				3
Phalarope - unidentified																				3
Black-bellied Plover	30																			3
Sanderling																				30
Spotted Sandpiper																				30
Stilt Sandpiper																				30
Willet	24																			30
Yellowlegs - unidentified																				30
Shorebird - large	4				9	6	2	15		26	2		32	3	1	7	3		13	1
Shorebird - small/medium	331	327			604	472	63	26	122	2612	86	2	259	359	27	19	27		86	
Shorebird - unidentified	334	7	10643	1403	3830	193	92	1830	168	10397	110	112	4642	2135	280	916	2117	4335	161	95
Others																				
TOTAL	788	343	10672	1403	4467	865	195	1910	314	13588	259	141	5654	5078	334	944	28702	4335	314	99
																				Subtotal 33450

1 = Antelope Lake

2 = Buffalo Round Lake

3 = Buffer Lake

4 = Burke Lake

5 = Cactus Lake

6 = Crane Lake

7 = Cypress Lake

8 = Eyebrow Lake

9 = "Fairyhill Marsh"

10 = Grill Lake

11 = Junction Reservoir

12 = Kettlehut Lake

13 = Kutawagan Lake

14 = Last Mountain Lake - north end

15 = Last Mountain Lake - south end

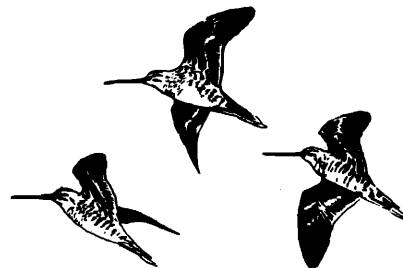
16 = Luck Lake

17 = Manito Lake

18 = Lake between Manito and Wells

19 = Wells Lake

20 = Little Manito and adjacent small lake



1987

Table 3.- continued

SPECIES	Number of Birds Observed by Lake											TOTAL	Total for Lakes (<100 Birds)	Totals Chaplin Lake	Totals Old Wives	Total Sask.
	21	22	23	24	25	26	27	28	29	30	31					
American Avocet	124	184	60	6	2	334	182		4	11	232	2042	7	239	555	2843
Dowitcher - unidentified												2				2
Hudsonian Godwit												1				1
Marbled Godwit		9	10		6	1	1					8	107	1	44	155
Killdeer		4	1		2	2			4	1	4	75	8	21	3	104
Red-necked Phalarope												26630		30		26660
Wilson's Phalarope	1	2				2						5	57	30		87
Phalarope - unidentified												12	17			17
Black-bellied Plover	31		58		290						15	1	822		40	862
Sanderling													30	13944	1541	15515
Spotted Sandpiper									1				7	2		9
Stilt Sandpiper	275		25		112	3221			50		2	6414		405		6819
Willet		9	11			1	3				6	9	190	90	1	285
Yellowlegs - unidentified						2							2			2
Shorebird - large	24	34			79	7	10	1	11			54	344	69	142	557
Shorebird - small/medium	2437	45	51		4095	55	1906		79	156	335	14581	22	366	1040	16009
Shorebird - unidentified	7762	428	787	805		1695	4501	1632	135	25	3673	65243	100	27641	54822	147806
Others														*21077	**1669	22746
TOTAL	10654	715	1003	811	4586	5320	6603	1633	284	214	4336	116564	146	64392	59773	240875

- 21 = Muddy Lake
 - 22 = Opuntia Lake
 - 23 = Pelican Lake
 - 24 = Porter Lake
 - 25 = Big Quill Lake
 - 26 = Middle Quill Lake
 - 27 = Reed Lake
 - 28 = Rice Lake
 - 29 = Seagram Lakes
 - 30 = Snakehole Hole
 - 31 = Teo Lakes
- * = Red Knot + Bairds Sandpiper + Semipalmated Sandpiper + White-rumped Sandpiper
 ** = Red Knot + Piping Plover + Bairds Sandpiper + Semipalmated Sandpiper + White-rumped Sandpiper.

Table 4. Shorebird aerial survey results of waterbodies surveyed in Alberta between 21 - 23 May 1987; lakes with >100 birds only.

SPECIES	Number of Individuals by Lake																										TOTAL	Total for Lakes <100 birds	Total Alta.	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26				
American Avocet	14	45	12	54	36	38	166	42	119	39	15	13	63	29	8	32		15	318	46	9	356	6	1	157	122	1755	18	1773	
Hudsonian Godwit					2								1			1								1			5		5	
Marbled Godwit		15		3	5	7	12	15			1		1	23	9	17	39	11	4	56	20			6	9	3	256	29	285	
Killdeer	1	1	8	14	6		6	11			4	1	1	16	3	1	32	7	2	27	18	4			2		165	17	182	
Red-necked Phalarope												3545															300	3845	3845	
Wilson's Phalarope					1									2								2	7				1	13	8	21
Phalarope - unidentified												8																8		8
Black-bellied Plover				8	1	23		13	1		67		5	36	40	2	35	3	1	40		21		15		69	380	28	408	
Sanderling																							85				85		85	
Spotted Sandpiper																2	2					4	2				11		11	
Stilt Sandpiper				364	27	450	16									1											120	981		981
Willet	1	7	1	10	9	29	55	10	19				3	1	14	11	5	81	29	14	59	35	6	20	31	450	45	495		
Yellowlegs - unidentified	5	15		6	6	2					7						3										47		47	
Shorebird - large		4		4	5	11	28	2	6	1	1		20	4	15	2	44	8	25		19	32		4	17	68	320	7	327	
Shorebird - small/medium	107	219	88	201	188	162	147	48	36	101	61	102	33	850	196	84	356	343	10	1	236	945	44	1	5409	9968	74	10052		
Shorebird - unidentified	29	650	134	1809	836	226	83	34	80	263	37	649	825	1107	109	20	272	99	25	39	11	257	508	3165	1	22525	33793	81	33874	
TOTAL	157	956	243	2473	1122	917	489	220	252	404	212	4310	960	2029	421	165	735	622	426	146	419	1695	577	3277	207	28648	52082	308	52390	

- 1 = Akasu Lake
 - 2 = Beavertill Lake
 - 3 = Birch Lake
 - 4 = Bittern Lake
 - 5 = Buffalo Lake
 - 6 = Chain Lakes
 - 7 = Coleman Lake
 - 8 = Cowokd Lake
 - 9 = Demay Lake
 - 10 = Dusky Lake
 - 11 = Eagle Lake
 - 12 = Gooseberry Lake
 - 13 = Gough Lake
 - 14 = Grassy Island Lake
 - 15 = Keho Lake
 - 16 = Louisiana Lakes
 - 17 = Marlon Lake
 - 18 = McGregor Lake
 - 19 = Miner Lake
 - 20 = Namaka
 - 21 = Newell
 - 22 = Pakowki Lake
 - 23 = Red Deer Lake
 - 24 = Reflex Lakes
 - 25 = Scots Lake
 - 26 = Sounding Lake
- * Totals from 3 Lakes not yet analysed (ca 25,000) not included

Table 5. Shorebird aerial survey results of waterbodies surveyed in Manitoba between 28 - 29 May 1987.

SPECIES	Number of Birds Observed by Lake															TOTAL
	Lakes with >100 birds					Lakes with <100 birds										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
American Avocet	2		8	3	140							1				154
Dunlin			15													15
Marbled Godwit		3	2	3	4											12
Killdeer	4	22	24	15	2			13		4					1	85
Wilson's Phalarope				1												1
Black-bellied Plover								33								33
Spotted Sandpiper								1								1
Willet	1	4	3	8	17						2					35
Shorebird - large			5	3												10
Shorebird - small/medium	122	703	53	1037	7311			52		15	11	5			2	9337
Shorebird - unidentified	233	228	129	729	15594		1			5					2	16921
TOTAL	362	960	239	1799	23068	0	1	99	0	24	13	6	0	0	33	26604

- 1 = Oak Hammock Marsh
 2 = East Shoal Lake
 3 = North Shoal Lake
 4 = West Shoal Lake
 5 = Whitewater Lake
 6 = Louise Lake
 7 = Lower Devil Lake
 8 = Lake Manitoba - South Shore
 9 = Maple Lake

- 10 = Nettley - Libau Marsh
 11 = Oak Lake
 12 = Plum Lake
 13 = Rock Lake
 14 = Swan Lake
 15 = Lake Winnipeg - South Shore

Only Sounding Lake (with 28 648 shorebirds) and Kimiwan Lake fall within the realm of Regional Reserve status. Historical data and ground surveys this spring and fall suggest that some lakes such as Reflex, Pakowki, Gooseberry, Chain, Buffalo and Bittern Lakes, may prove in future years to be extremely important to staging spring shorebirds.

A freak snowstorm occurred only days before the surveys were initiated and undoubtedly resulted in shifting the birds further east, particularly in the northeastern part of the study area. Ground surveys conducted in the Chain Lakes/Sounding Lakes area indicated that numbers of birds utilizing these sites were considerably higher at other times during spring migration.

Manitoba

Of the 15 waterbodies surveyed in Manitoba on 28 and 29 May 1987, only five had more than 100 birds. We anticipated many lakes (Netley-Libau Marsh, Oak and Plum Lakes and Oak Hammock Marsh) to be important shorebird staging areas (based on historical information) but they actually contained very few birds.

Only 26 604 shorebirds were counted in Manitoba, of which 23 068 were seen on Whitewater Lake (Table 5). These low numbers were undoubtedly a result of the extremely high water levels and rainfall that occurred in Manitoba in the spring of 1987. The birds may well have been scattered on the flooded farm fields. Further work in Manitoba is required to assess the importance of other waterbodies in years with more normal weather.

CONCLUSION

The results of the spring aerial surveys have identified a number of key staging areas in prairie Canada, two of which are worthy of Hemispheric Reserve status (Chaplin and Old Wives Lake). Four sites (Manito, Sounding, Kimiwan and Whitewater Lakes) support staging shorebirds at levels which identify them as potential Regional Shorebird Reserves.

These results indicate that continued aerial surveys are required to assess the importance of various waterbodies. Banding programs and ground surveys should be designed to clarify turnover rates in migrant shorebirds at major sites, thereby enabling clear evaluations of population levels on various lakes. Specifically, Chaplin and Old Wives Lake, the Sounding Lake/Chain Lakes area, Whitewater Lake and Kimiwan Lake will be ground surveyed in 1988. A major banding program at Chaplin Lake will be initiated in the spring of 1988 to attempt to quantify turnover rates and clarify the wintering grounds of Sanderlings using this area and also to attempt to sort out migration routes for species utilizing the central provinces.

Future programs include food study/habitat requirements of various shorebird species and clearer definition of migration phenology throughout the prairies (see Colwell et al. 1988, this *Bulletin*).

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