

# SEASONAL SHOREBIRD ABUNDANCE AT LAST MOUNTAIN LAKE WILDLIFE MANAGEMENT UNIT

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The prairie wetlands of Canada, exemplified by the Last Mountain Lake Sanctuary, provide important habitats for many species of birds. Approximately 20% of shorebird species that breed in North America use prairie wetland habitat; 65% of boreal and arctic-breeding species use these wetlands during migration.<sup>5</sup>

Several aspects of shorebird biology have focused conservation efforts on understanding resource requirements of migrating birds, particularly in marine environments.<sup>5</sup> First, migrating shorebirds typically use a limited number of staging areas that may be widely separated geographically. Second, seasonal availability of resources imposes time limits on migration resulting in concentrations of large numbers at sites with adequate food supplies. Third, many staging areas are also valuable to humans for a variety of reasons. Overall, much more is known of the abundance and habitat relationships of shorebirds in marine environments than of shorebirds that use freshwater habitats of the continental interior.<sup>1 3 5 6</sup>

## Study area and methods

Data on shorebird abundance were collected during 1984, a year of extreme drought when approximately 90% of local wetlands were dry. Three sites at Last Mountain Lake Wildlife Management Unit were censused that differed in substrate, vegetation and open-water features. Censuses during 1983 indicated that these sites were representative of habitats that were used by nearly all breeding and

migrating shorebirds in the area.

Shorebirds were observed from 30 April to 30 August at Lanigan Creek (S4-29-23-W2; 51° 27'N 105° 11'W), a 100 ha site composed of flooded meadow with Wild Barley (*Hordeum jubatum*), Seaside Arrowgrass (*Triglochin maritima*), sedges (*Carex* spp.) and rushes (*Juncus* spp.), and prairie with blue grasses (*Poa* spp.), Salt Grass (*Distichlis stricta*), wheatgrasses (*Agropyron* spp.), Western Snowberry (*Symphoricarpos occidentalis*) and Prickly Rose (*Rosa acicularis*) that bordered a permanent water source. During spring flooded meadow was extensive and mudflats constituted a small portion of available habitat. As summer progressed the meadow dried and mudflats became increasingly available.

Shorebirds were censused from 8 May to 28 August at a 10 ha site located on Basin A (S33-28-23-W2; 51° 26'N 105° 11'W). Shallow-water areas and adjoining mudflats under varying moisture conditions typified Basin A habitat. Bulrush stands (*Scirpus* spp.) dotted open-water habitat in spring; a dense growth of Red Samphire (*Salicornia rubra*) covered mudflats as water levels dropped. Otherwise the study area was unvegetated.

Shorebirds also were censused from 3 May to 20 August at Perry's Beach (W30-27-23-W2; 51° 18'N 105° 12'W), a 1.5 km stretch of sandy and rocky beach on the east shore of Last Mountain Lake. The beach varied in width from 5-30 m and was largely unvegetated. Lake water

levels changed very little during the study.

At Lanigan Creek and Basin A one to three observers censused shorebirds from 3-m towers using 20-25x spotting scopes and 7x binoculars. At Perry's Beach one observer walked the beach and recorded data from vantage points. Censuses at Lanigan Creek were conducted at random time intervals; each Basin A census was paired with a Lanigan Creek survey. Censuses at Perry's Beach were conducted at predetermined times.

The late April to August sampling period was divided into spring (April-June) and summer (July-August) based on the chronology of migration and breeding at Last Mountain Lake.<sup>2</sup> Total numbers of censuses at each site were as follows: Basin A spring 30, summer 23, Lanigan Creek spring 123, summer 99, Perry Beach spring 3, summer 19.

## Results

Twenty-nine species of shorebirds were recorded during 1984 (includes two species of dowitchers not distinguished in Table 1). One other species, Buff-breasted Sandpiper also was observed during the study; it occurred on one occasion near the Perry's Beach study site during August. The total number of species recorded (regardless of season) was 25 at Basin A and 23 at each of Lanigan Creek and Perry's Beach. During any one season, however, the number of species ranged from 10 at Perry's Beach (spring) to 24 at Basin A (spring).

There was considerable variability in the seasonal abundance of species. The most abundant shorebirds during spring at Basin A were Stilt Sandpiper, Wilson's Phalarope and Semipalmated Sandpiper; the most common summer species were Semipalmated Sandpiper, dowitchers and Lesser Yellowlegs. Overall, 80% of species at Basin A were recorded during both spring and summer.



*Wilson's Phalarope*

*G.W. Beyersbergen*

Table 1. SEASONAL SHOREBIRD ABUNDANCE AT THREE WETLAND SITES AT LAST MOUNTAIN LAKE

Site Season Species	Numbers Observed												
	Basin A			Lanigan Creek			Perry's Beach			Spring			
	Total #	$\bar{x}$	Summer Total #	$\bar{x}$	Spring Total #	Summer Total #	$\bar{x}$	Spring Total #	Summer Total #	$\bar{x}$	Spring Total #	Summer Total #	$\bar{x}$
Black-bellied Plover	6	0.2	2	0.1	-	-	-	-	-	-	-	8	0.4
Lesser Golden Plover	19	0.6	1	0.1	13	-	-	1	1	0.3	1	1	0.1
Semipalmated Plover	20	0.7	288	12.5	-	11	0.1	-	71	-	-	71	3.7
Piping Plover	1	0.1	-	-	-	-	-	-*	4	-	-	4	0.2
Killdeer	64*	2.1	44	1.9	291*	374	2.4	4*	157	1.3	4*	157	8.3
American Avocet	395*	13.2	87	3.8	337*	45	2.7	3*	-	1.0	-	-	-
Greater Yellowlegs	7	0.2	14	0.6	12	149	0.1	-	82	-	-	82	4.3
Lesser Yellowlegs	364	12.1	972	42.3	65	1510	0.5	-	383	-	-	383	20.2
Solitary Sandpiper	-	-	2	0.1	-	-	-	-	1	-	-	1	0.1
Willet	65*	2.2	16	0.7	288*	86	2.3	10	122	3.3	10	122	6.4
Spotted Sandpiper	2	0.1	8	0.4	14*	38	0.1	-	35	-	-	35	1.8
Upland Sandpiper	1	0.1	-	-	73*	50	0.6	-	-	-	-	-	-
Hudsonian Godwit	8	0.3	24	1.0	2	21	0.1	2	248	0.7	2	248	13.1
Marbled Godwit	131*	4.4	104	4.5	258*	147	2.1	10	406	3.3	10	406	21.4
Ruddy Turnstone	-	-	-	-	-	-	-	-	4	-	-	4	0.2
Red Knot	-	-	-	-	1	-	0.1	103	24	34.3	103	24	1.3
Sanderling	10	0.3	-	-	6	-	0.1	122	130	40.7	122	130	6.8
Semipalmated Sandpiper	992	33.7	3056	132.9	99	385	0.8	2	51	0.7	2	51	2.7
Least Sandpiper	721	24.0	386	16.8	59	79	0.5	-	29	-	-	29	1.5
White-rumped Sandpiper	140	4.7	1	0.1	20	4	0.2	-	-	-	-	-	-
Baird's Sandpiper	13	0.1	40	0.4	13	40	0.1	-	116	-	-	116	6.1
Pectoral Sandpiper	23	0.8	19	0.8	15	81	0.1	-	24	-	-	24	1.3
Dunlin	27	0.9	-	-	-	-	-	-	-	-	-	-	-
Stilt Sandpiper	2231	74.4	567	24.7	438	146	3.6	-	2	-	-	2	0.1
Dowitcher sp.	859	28.6	1169	50.8	57	656	0.5	-	32	-	-	32	1.7
Common Snipe	-	-	-	-	26*	-	0.2	-	-	-	-	-	-
Wilson's Phalarope	1021*	34.0	319	13.9	1101*	1002	9.0	5	3	1.7	5	3	0.2
Red-necked Phalarope	497	16.6	81	3.5	84	145	0.7	-	-	-	-	-	-

<sup>a</sup> See text for number of censuses during a season, spring - April to June, summer - July, August;  $\bar{x}$  = Average number seen on a census

\* This species bred at the site or in close proximity to the wetland

Shorebird numbers at Lanigan Creek were much lower than at Basin A, despite the larger study area. The most common spring shorebirds were Wilson's Phalarope and Stilt Sandpiper; the most common summer species were Lesser Yellowlegs and Wilson's Phalarope. At Lanigan Creek 78% of species were observed during both seasons.

The spring shorebird assemblage at Perry's Beach was dominated by Red Knot and Sanderling. Lesser Yellowlegs, Hudsonian Godwit and Marbled Godwit were most abundant during summer. Overall 39% of species were present during spring and summer.

Shorebird abundance was not compared between sites owing to differences in the size and habitat configurations of the study areas. However, sites differed in species composition. During spring, Basin A shared 77% of the species with Lanigan Creek and only 38% with Perry's Beach. Lanigan Creek shared 45% of species with

Perry's Beach. Species assemblages at the three sites were more similar during summer than spring. During summer Basin A had 82% and 72% of species in common with Lanigan Creek and Perry's Beach, respectively; Lanigan Creek and Perry's Beach shared 58% of species.

### Discussion

Differences among sites in the abundance of shorebirds may be related to habitat features that reflect food or other resources. The presence of Semipalmated Plover at Basin A and its absence a short distance away at Lanigan Creek indicates that the availability of extensive mudflats may be an important habitat feature for this species. Similarly the nearly exclusive use of sandy and rocky lakeshore habitat by Red Knot and Sanderling suggests that these species have relatively strict habitat preferences. In contrast, species such as Lesser Yellowlegs, Marbled Godwit and some of the small peeps were found at all three sites.



*Lanigan Creek*

*P.S. Taylor*

Apparent differences in shorebird assemblages may stem from the fact that fewer censuses were conducted at Perry's Beach, particularly during the spring. However species such as Red Knot, Sanderling and Ruddy Turnstone were largely responsible for the differences in species composition. These species were regularly observed at other lakeshore sites that were characterized by rocky and sandy beaches; they were rarely observed at Basin A and Lanigan Creek, despite extensive coverage of these sites.

Limited habitat availability stemming from drought conditions may have resulted in unusual patterns of habitat use during this study. In addition, shorebirds may have concentrated in larger numbers than usual at a limited number of sites. From a management perspective, however, drought conditions provide a situation offering special insights into

habitat requirements of species. At such times limited habitat may force individuals to concentrate in areas where they may be subject to reduced food abundance, increased interference while foraging, and elevated risks of disease.<sup>4</sup>

In summary, Last Mountain Lake Wildlife Management Unit offers a diversity of habitats for more than 20 species of migrating shorebirds and 9 locally breeding species.

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*Marbled Godwit*

*G.W. Beyersbergen*

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NOTE: Mark Colwell's studies at Last Mountain Lake were focused on the Wilson's Phalarope. Since this paper was developed from the data collected at three discrete sites in only one season the large concentrations of shorebirds that do occur at the lake were not reported here. As an example, there have been reports of 15 thousand Red-necked Phalaropes, 6 thousand Sanderlings and 5 thousand Ruddy Turnstones.



*Semipalmated Plover*

*G.W. Beyersbergen*