

Migrational Survey and Habitat Usage of Shorebirds in the Lake Erie Marsh Region

PROGRESS REPORT-2004

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INTRODUCTION

The importance of studying shorebird migration and stopover habitat needs have greatly increased as wetland habitat acreage dwindles (Helmert 1992). The loss and degradation of migration and wintering habitat from agriculture and urban development, as well as, disturbance at feeding and roosting sites are creating pressures on these long distant migrants (Helmert 1993).

Shorebirds differ from other neotropical migrants by narrow habitat requirements. Abundant food producing stopover sites are needed to acquire lipid reserves for continued migration and to produce eggs once they reach the breeding grounds (Eldridge and Krapu 1993, Helmert 1992). Lake Erie marshes make up the largest stopover habitats in the eastern United States between coastal habitats and northern breeding areas. Over 30 species of shorebirds migrate through the Lake Erie marshes each year with differential age migration peaks and habitat uses. Determining habitat uses and management regimes that create the favored habitats will be beneficial for increasing the value of the marsh systems to shorebirds (Skagen and Knopf 1993). Improved management of spring through fall stopover sites can increase summer reproduction success and survivorship of fledglings (Knauer 1977, Taylor 1977). BSBO was successful in acquiring the status of Regional Site under the Western Shorebird Hemispheric Reserve Network in September 2000.

MATERIALS AND METHODS

Units of Ottawa NWR complex and surrounding wetlands of the Lake Erie marsh region were surveyed by vehicle or on foot from spring migration (29 February) through fall (23 November). Bird numbers were censused utilizing the International Shorebird Survey protocol (date, location, time observer, water depth, and disturbance) plus additional information on individual management units and habitat conditions. Data was compiled by region and marsh unit.

RESULTS AND DISCUSSION

The 2004 field season was the tenth full year of data collection for shorebird migration. Fourteen marshes were sampled at least once in the spring and thirteen in the fall. The main areas sampled were Ottawa NWR, Magee Marsh W/A, Turtle Creek, Pipe Creek W/A, and Ottawa county fields. The number of sample dates and the total shorebirds are shown in Table 1.

Spring Migration

A total of 93,304 birds of 26 species were counted during 61 trips (Table 2). Ottawa NWR, Magee Marsh W/A, and Metzger Marsh W/A were the most often surveyed wetlands. Heaviest bird concentrations were observed on Crane Creek of Ottawa NWR, Metzger Marsh W/A, and Magee Marsh W/A. Peak activity on major marshes is shown in Table 3. Dominant species counted and their peak movements were Killdeer (March 1-10), Dunlin (May 1-10); Pectoral Sandpiper (April 21-30); Least Sandpiper (May 11-20); Semipalmated Sandpiper (May 21-31); Semipalmated Plover (May 11-20), Lesser Yellowlegs (May 1-10), Ruddy Turnstone (May 21-31), Greater Yellowlegs (March 21-30), American Golden Plover (April 21-30), and Spotted Sandpiper (May 11-20) (Table 4).

The Pectoral Sandpiper appears to be the dominant of early April along with Greater Yellowleg and Common Snipe. Dunlin become the dominate shorebird in May with sub-dominants of Semipalmated Sandpiper, Semipalmated Plover, American Golden Plover, and Least Sandpiper.

Spring habitat was predominantly composed of mudflats along the various estuaries such as Turtle Creek and Crane Creek. The normal habitat created by drawdowns of the control level marshes was below normal levels as most marsh managers chose to hold water on wetlands with the low water levels of Lake Erie. Spring drawdowns geared for smartweed growth for fall migration food is well timed for species migrating in late April through early May. Drawdowns in late May for millet growth coincides with late spring migrants and some of the early fall migrants in early July.

Fall Migration

Thirty-four species totaling 49,842 birds were recorded on 57 trips (Table 2). Consistent marshes were Metzger Marsh W/A, Magee Marsh W/A, and Crane Creek estuary on Ottawa NWR. These estuary values were a result of the lowest levels of Lake Erie in over 30 years. Extensive mudflats were provided throughout the fall migration. Peak activities of major sampled marshes are shown in Table 5. Dominant species counted and their peak movements were Least Sandpiper (July 11-20); Killdeer (Sept.1-10); Short-billed Dowitcher (July 21-31); Semipalmated Sandpiper (Aug. 11-20); Lesser Yellowlegs (July 21-31); Pectoral Sandpiper (Aug 11-20); Greater Yellowlegs (Oct. 1-10); Stilt Sandpiper (Sept 21-30); Black-bellied Plover (Oct. 1-20); Semipalmated Plover (Aug. 11-20); Long-billed Dowitcher (Sept.11-20); and Dunlin (Nov. 1-10)

(Table 6).

Fall migration is more drawn out than spring, running from early July into November. The earliest species to peak were the Short-billed Dowitcher, Stilt Sandpiper, and Least Sandpiper in July. Lesser Yellowlegs, Semipalmated Plover, and Semipalmated Sandpiper peaked in August. September peaks were observed in Killdeer and Sanderling. Early to mid-October had peak species of Long-billed Dowitcher, Greater Yellowlegs, and Black-bellied Plover. Dunlin peaked in early November.

The abundant mudflats on all rivers and streams provided a volume of habitat similar to the previous several falls. If lake levels remain the same in the year 2005, they are expected to be excellent for both spring and fall migrations. However, many areas began showing increased vegetative growth which will reduce habitat availability to shorebirds.

Habitat Use

As yearly data builds a better picture of habitat use will be developed. It appears preferred habitat typically is quite transitory. However, Turtle Creek in 1994 showed use can be spread out over an entire migration. Lower lake levels in fall 1999 through 2004 have shown the potential shorebird use of natural habitat creation in the Lake Erie Marsh region. Heaviest use occurred in habitat of several inches of water to recently emerged mudflats. Species use varied with habitat compartmentalizing themselves. Deeper water was used by the larger shorebirds and phalaropes; very shallow water by larger sandpipers; wet mud flats by the smaller peeps and the plovers. The dry flats were utilized by the larger plovers and Baird's and Buff-breasted Sandpipers.

Shorebirds need quality habitat which can be provided by knowing what prey exists in a particular area, what prey is needed by shorebirds and the timing of shorebirds (Rundle and Frederickson 1981, Conners et. al. 1981). With the continued monitoring of shorebird numbers, species, migration timing, and habitat usage in the Lake Erie marsh region, information can be gathered to provide direction to resource managers for including the shorebird group into their management scheme.

Shorebird needs in wetland management plans require year around consideration. Rotation of management units is necessary to provide the mudflat conditions needed to forage but also to ensure units in deep water condition developing a food base and drawdown units that will provide substrate for invertebrate growth in following years.

The Observatory lead a successful application for Western Shorebird Reserve Network status for the Lake Erie Marsh Region. The area now represents one of two locations in the entire Great Lakes region.

COSTS

Cost of this project was covered by the Black Swamp Bird Observatory through computer support, data analysis, and volunteers for data collection (220 hrs @ \$12.00/hr for services=\$2640).

LITERATURE CITED

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Table 1. Sampling intensity of surveyed marshes and shorebird numbers, 2004.

Marsh sampled	Spring			Fall			Total		
	# days sampled	Total birds	Birds per day	# days sampled	Total birds	Birds per day	# days sampled	Total birds	Birds per day
Pipe Creek W/A	3	160	53	2	25	13	5	185	37
Little Portage W/A				1	89	89	1	89	89
Magee Marsh W/A	20	577	29	4	474	119	24	1,051	44
Maumee SP	7	185	26				7	185	26
Metzger Marsh	12	59,997	5,000	6	1,506	251	18	61,503	3,417
Ottawa NWR	14	32,007	2,286	27	46,310	1,715	41	78,317	1,910
Pickereel Crk. W/A				5	462	92	5	462	92
Toussaint W/A				2	140	70	2	140	70
Mallard Club W/A				1	1	1	1	1	1
Sheldon's Marsh				1	403	403	1	403	403
Ottawa Co.Flooded fields	5	378	76				5	378	76
Turtle Creek				1	127	127	1	127	127
Moxley				6	258	43	6	258	43
Muddy Creek				1	47	47	1	47	47
Total	61	93,304	1530	57	49,842	874	118	143,146	1213

Table 2. Shorebird numbers observed during spring and fall migration in the Lake Erie marshes, 2004.

Species	Spring	Fall	Total	Species	Spring	Fall	Total
Piping Plover	0	0	0	Sh.-billed Dowitcher	115	3,960	4,075
Semi-palmated Plover	2,430	1,232	3,662	Lo.-billed Dowitcher	1	543	544
Killdeer	675	6,418	7,093	Gr. Yellowlegs	557	993	1,550
Golden Plover	512	80	592	Less. Yellowlegs	4,877	8,263	13,140
Bl.-bellied Plover	47	353	400	Red Knot	55	17	72
Spotted Sandpiper	147	89	236	Wilson Phalarope	7	21	28
Solitary Sandpiper	185	28	213	Red-necked Phal.	0	11	11
Pectoral Sandpiper	492	2,945	3,437	Upland sandpiper	0	0	0
Wh.-rump Sandpiper	40	80	120	Ruddy Turnstone	177	5	182
Baird's Sandpiper	1	44	45	Willet	2	15	17
Least Sandpiper	975	1,955	2,930	Am. Avocet	5	6	11
Stilt Sandpiper	1	690	691	Am. Woodcock	0	1	1
Semi.-palm. Sandpiper	791	7,022	7,813	Common Snipe	129	67	196
Western Sandpiper	0	10	10	Sanderling	6	51	57
Marbled godwit	0	21	21	Whimbrel	80	1	81
Buff-breasted sandpiper	0	1	1	Unident. Dowitcher	0	78	78
Dunlin	80,995	14,795	95,790	Unident. Peep	0	20	20
Hudsonian godwit	0	20	20	Ruff	0	1	1
Blk.-neck Stilt	2	5	7	Red Phalarope	0	1	1
TOTAL birds	93,304	49,842	143,146	# Trips	61	57	118
# observer hrs.			211.0				

Table 3. Mean shorebird numbers observed by ten day periods for selected marshes during spring migration in the Lake Erie marshes, 2004.

10-day Periods	Principle Marshes Surveyed					
	Turtle Creek	Ottawa NWR	Magee Marsh	Metzger Marsh	Ottawa Co. Fields	Lucas Co. Fields
March 1-10			7			
March 11-20			6			
March 21-31		18	27			
April 1-10		22	4			
April 11-20		282	58			
April 21-30		3,301	10			
May 1-10		2,338	130	5,758		
May 11-20		43	44	5,972		
May 21-31		547	11	1,932		
June 1-10		20		13		
June 11-20			2			
June 21-30						

Table 4. Timing of spring migrating shorebirds (avg. #/trip) in the Lake Erie marsh region, 2004.*

Time Period	Semi Plov	Killdeer	Sp. Sand	Gold. Plover	Pect. Sand	Semi-Sand	Dunlin	Greater Yleg	Lesser Yleg	Least Sand.	Rudy Turn.
Mar 1-10		<u>34</u>									
Mar 11-20		5									
21-31		20			3			<1			
Apr 1-10		5			5		22	1	<1		
11-20		6	<1		23		114	1	2		
21-30		5	<1	<u>57</u>	<u>33</u>	<1	1,653	<u>23</u>	111	2	
May 1-10	47	5	1	<u>7</u>	4	1	<u>2,992</u>	18	<u>222</u>	31	1
11-20	<u>126</u>	4	<u>11</u>		<1	1	1,259	7	38	<u>50</u>	2
21-31	69	10	2			<u>84</u>	856	<1	1	3	<u>16</u>
Jun 1-10	<1	10	1				3	<1			<1
11-20		2									
21-30											

*numbers underlined are peaks for each species

Table 5. Mean shorebird numbers observed by ten-day periods for selected marshes during fall migration in the Lake Erie marshes, 2004.

10-day periods	Principle		Marshes				
	Metzger Marsh	Turtle Creek	Ottawa NWR	Magee Marsh	Pipe Creek	Sheldons Marsh	Toussaint W/A
July 1-10	177		108				
July 11-20	165		745	125			
July 21-31	453		851				
Aug. 1-10	257		538	10			
Aug. 11-20			1,133	86			
Aug. 21-31	1		319				
Sept. 1-10			337				
Sept. 11-20			400	83			
Sept. 21-30			700				
Oct. 1-10			937				
Oct. 11-20			1,366				
Oct. 21-31			1,109				
Nov. 1-10			2,519				
Nov. 11-20			504				
Nov. 21-30			4				

Table 6. Timing of fall migrating shorebirds (avg. #/trip) in the Lake Erie marsh region, 2004.*

Time Period	Semi Plov	Killdeer	Pect Sand.	Least Sand.	Semi. Sand.	Great Yleg	Less Yleg	Sh-bill Dowit	Stilt Sand.	BB Plover	Dunlin	Lo-bill. Dowit
July 1-10		76		<u>18</u>		1	8	19				
11-20	<1	60	1	<u>102</u>	2	9	151	102	2		<1	
21-31	3	84	34	38	83	6	223	218	8		<1	
Aug 1-10	7	56	30	4	94	14	78	31	4		<1	
11-20	30	82	110	19	354	13	125	22	5	1	1	<1
21-31	15	45	19	9	61	9	70	14	15	1	<1	1
Sep. 1-10	22	136	4	6	71	13	38	13	7	1	1	19
11-20	14	46	13	12	105	10	50	2	7	2	<1	22
21-30	17	60	30	14	35	15	65	2	25	2	<1	1
Oct 1-10	28	92	103	10	35	17	99		3	18	432	3
11-20		51	5	<1		6	4			18	650	1
21-31	6	10	<1	2		2	2		2	3	775	7
Nov 1-10						4				<1	878	2
11-20						2					500	
21-30											31	

*numbers underlined are peaks for each species