

Marsh Bird and Amphibian Communities in the Spanish Harbour AOC, 1995 – 2002.



Purpose of the MMP

The Marsh Monitoring Program (MMP) was established to provide baseline surveys of marsh bird and amphibian populations and their habitats in marshes within Areas of Concern (AOCs) in the Great Lakes basin, sites where rehabilitation and restoration efforts have taken place or are planned in AOCs, and in many other Great Lakes basin wetlands. Marsh bird surveys were first implemented in the Canadian and bi-national AOCs in 1994. In 1995, the program expanded throughout the basin to include surveys of calling amphibians. To date, over 650 MMP volunteers have surveyed marsh bird and/or amphibian populations and their habitats. Information about abundance and diversity of these species provides useful, and easily obtainable indicators of habitat quality, structure and areal extent.

Purpose of the Report

This report summarizes results of MMP surveys done in the Spanish Harbour AOC from 1995 to 2002. It also explains how the set of indicators used by the MMP assesses marsh quality and describes the significance of MMP results for this AOC. Results herein provide an opportunity to determine whether or not amphibian and/or marsh bird community status at Spanish Harbour AOC wetlands are impaired. This report should be read in conjunction with the context and analyses description in the Marsh Monitoring Program: Areas of Concern Summary Reports 1995 – 2002.

Highlights of the MMP's Spanish Harbour Results

Indicator Species

The presence of the following suite of marsh bird and amphibian species indicates high quality marsh habitat.

A **T** indicates those species found in the Spanish Harbour AOC marshes.

Birds

- T** American Bittern (AMBI)
- American Coot (AMCO)
- Black Tern (BLTE)
- Blue-winged Teal (BWTE)
- Common Moorhen (COMO)
- Common Snipe (COSN)
- Least Bittern (LEBI)
- T** Marsh Wren (MAWR)
- T** C. Moorhen/ A.Coot (MOOT)
- T** Pied-billed Grebe (PBGR)
- T** Sora
- Virginia Rail (VIRA)

Amphibians

- Bullfrog (BULL)
- T** Chorus Frog (CHFR)
- Mink Frog (MIFR)
- Northern Leopard Frog (NLFR)
- T** Spring Peeper (SPPE)

- Since the program's initiation, only one marsh bird and one route surveyed for both amphibians and marsh birds has been monitored in the Spanish Harbour AOC. However, these routes were surveyed only in 1995 and 1996.
- Overall, four amphibian species were recorded in the Spanish Harbour AOC, including two amphibian indicator species (Chorus Frog and Spring Peeper). In general, species were recorded at various levels (Call Level Codes 1, 2 and 3).
- Overall, 16 species of marsh nesters were recorded in the Spanish Harbour AOC – a moderate level of diversity. Further, five (American Bittern, Marsh Wren, Common Moorhen/American Coot, Pied-billed Grebe, Sora) of 12 marsh bird indicator species were recorded in the Spanish Harbour AOC. Marsh Wren was the most abundant nesting species, followed by Swamp Sparrow, Red-winged Blackbird and Song Sparrow. Great Blue Heron was the most abundant water forager species and Tree Swallow was the most abundant aerial forager recorded.
- Of the two amphibian indicator species that occurred in the Spanish Harbour AOC, relative occurrence of Chorus Frog scored above the average of that at Great Lakes basin non-AOC routes. However, Spring Peeper relative occurrence scored within the average of that at Great Lakes basin non-AOC routes. Abundance of one marsh bird indicator species

(Marsh Wren) that occurred in the Spanish Harbour scored within the average of that at Great Lakes basin non-AOC routes. Abundance of three marsh bird indicator species (American Bittern, Pied-billed Grebe, Sora) scored below the average of that at Great Lakes basin non-AOC routes and American Coot/Common Moorhen were recorded only outside MMP station boundaries.

- Marsh bird indicator species diversity and marsh nesting bird species diversity in the Spanish Harbour AOC scored below the average of those at Great Lakes basin non-AOC routes. Amphibian indicator species diversity scored above the average those at of Great Lakes basin non-AOC routes, however, total amphibian species diversity scored below the average of those at Great Lakes basin non-AOC routes. Overall, this AOC is apparently impaired in its ability to support marsh dependent species however, monitoring of more routes in this AOC is required to make a more definitive assessment.

MMP Methods

Table 1. Marsh Monitoring Program Survey Methods

Survey	Time commitment	Skills Required	Survey Duration	Weather conditions
Birds	2 evenings, 10 days apart, between May 20 and July 5	ability to identify about 50 common birds	10 minutes at each station	warm, dry weather with little or no wind
Amphibians	3 nights, 15 days apart, between April 1 and July 15	ability to learn about 10 amphibian calls	3 minutes at each station	warm, dry weather with little or no wind

A route, consisting of up to eight semi-circular stations (100 m radius for marsh birds and unlimited distance for amphibians), is monitored in each marsh being surveyed. Stations are usually accessed by foot, but can be surveyed by canoe or boat. Marshes must be a minimum of two hectares and if very large, may support more than one route. Stations must be 500 metres apart for amphibian surveys and 250 metres apart for marsh bird surveys. Numbers of marsh birds heard calling or seen in the station are recorded. At amphibian stations, one of three Call Level Codes is used to record calling intensity of each species; abundance estimates are also made. Participants are also asked to identify if they hear each amphibian inside and/or outside of the 100 m semi-circle. Each MMP volunteer is provided with a training kit that fully explains survey methods. The kit also includes a copy of the MMP Training Tape that aids volunteers in learning songs and calls of common marsh birds and amphibians. For further information about these methods, please refer to the 2003 edition of the *MMP Training Kit and Instructions for Surveying Marsh Birds, Amphibians and their Habitats*, which is available from Bird Studies Canada.

MMP in the Spanish Harbour AOC

Since the program's initiation, only one bird and one route surveyed for both amphibians and marsh birds has been monitored in the Spanish Harbour AOC. However, these routes were only surveyed in 1995 and 1996.

Recent progress reporting indicates that the Spanish Harbour and delta marsh are no longer recognized as Areas of Concern, but rather as Areas in Recovery. The Spanish River Delta Marsh is a provincially significant wetland with very little habitat lost to development activities.

To become involved, please contact the MMP Volunteer Coordinator, Bird Studies Canada at (888) 448-2473 (phone), (519) 586-3532 (fax), or by email at aqsurvey@bsc-eoc.org.

Results

Two routes at two separate marshes were monitored in the Spanish Harbour AOC, one was tiny and one was huge in size. One marsh was coastal, thus affected by fluctuations in Georgian Bay water levels, and the other was situated inland.

Overall, four amphibian species were recorded in the Spanish Harbour AOC, including two amphibian indicator species (Chorus Frog and Spring Peeper) (Table 3). Data from the Ontario Herpetofaunal Summary indicate that historically only American Toad and Wood Frog have occurred in this AOC. However, Spring Peeper Northern Leopard Frog, Mink Frog and Bullfrog all have ranges that include this AOC. In general, amphibian species were recorded at low to high levels (Call Level Codes 1, 2 and 3).

Overall, 16 species of marsh nesters were recorded in the Spanish Harbour AOC – a moderate level of diversity (Table 4). Further, five (American Bittern, Marsh Wren, Common Moorhen/American Coot, Pied-billed Grebe, Sora) of 12 marsh bird indicator species were recorded in the Spanish Harbour AOC. According to the Ontario Breeding Bird Atlas database, several of the indicator species (i.e., Least Bittern, Common Moorhen and Virginia Rail) are apt to be absent or thinly scattered in the northern part of the Great Lakes basin. Densities for eight of 16 marsh nesting species were higher at Spanish Harbour routes than that for these species at Great Lakes basin non-AOC routes. Marsh Wren was the most abundant nesting species, followed by Swamp Sparrow, Red-winged Blackbird and Song Sparrow.

Three water foragers and five aerial foragers were recorded in the Spanish Harbour AOC – a moderate level of diversity (Table 4). Great Blue Heron was the most abundant water forager species and Tree Swallow was the most abundant aerial forager recorded. Densities were higher at Spanish Harbour routes than averages of Great Lakes basin non-AOC routes for two (Great Blue Heron and Caspian Tern) of three water foraging species and for two (Purple Martin and Tree Swallow) of five aerial foraging species.

Conclusions

Of the two amphibian indicator species that occurred in the Spanish Harbour AOC, relative occurrence of Chorus Frog scored above the average of that at Great Lakes basin non-AOC routes. However, Spring Peeper relative occurrence scored below the average of that at Great Lakes basin non-AOC routes (Table 5). Abundance of one marsh bird indicator species (Marsh Wren) that occurred in the Spanish Harbour scored within the average of that at Great Lakes basin non-AOC routes. Abundance of three marsh bird indicator species (American Bittern, Pied-billed Grebe, Sora) scored below the average of that at Great Lakes basin non-AOC routes and American Coot/Common Moorhen were recorded only outside MMP station boundaries.

Marsh bird indicator species diversity and marsh nesting bird species diversity in the Spanish Harbour AOC scored below the average of those at Great Lakes basin non-AOC routes (Table 6). Amphibian indicator species diversity scored above the average those at of Great Lakes basin non-AOC routes, however, total amphibian species diversity scored below the average of those at Great Lakes basin non-AOC routes. The Spanish Harbour AOC appears to be impaired in its ability to support a high diversity of amphibian and marsh bird species (Table 6). Overall, this AOC is apparently impaired in its ability to support marsh dependent species however, monitoring of more routes in this AOC is required to make a more definitive assessment.

Recommendations

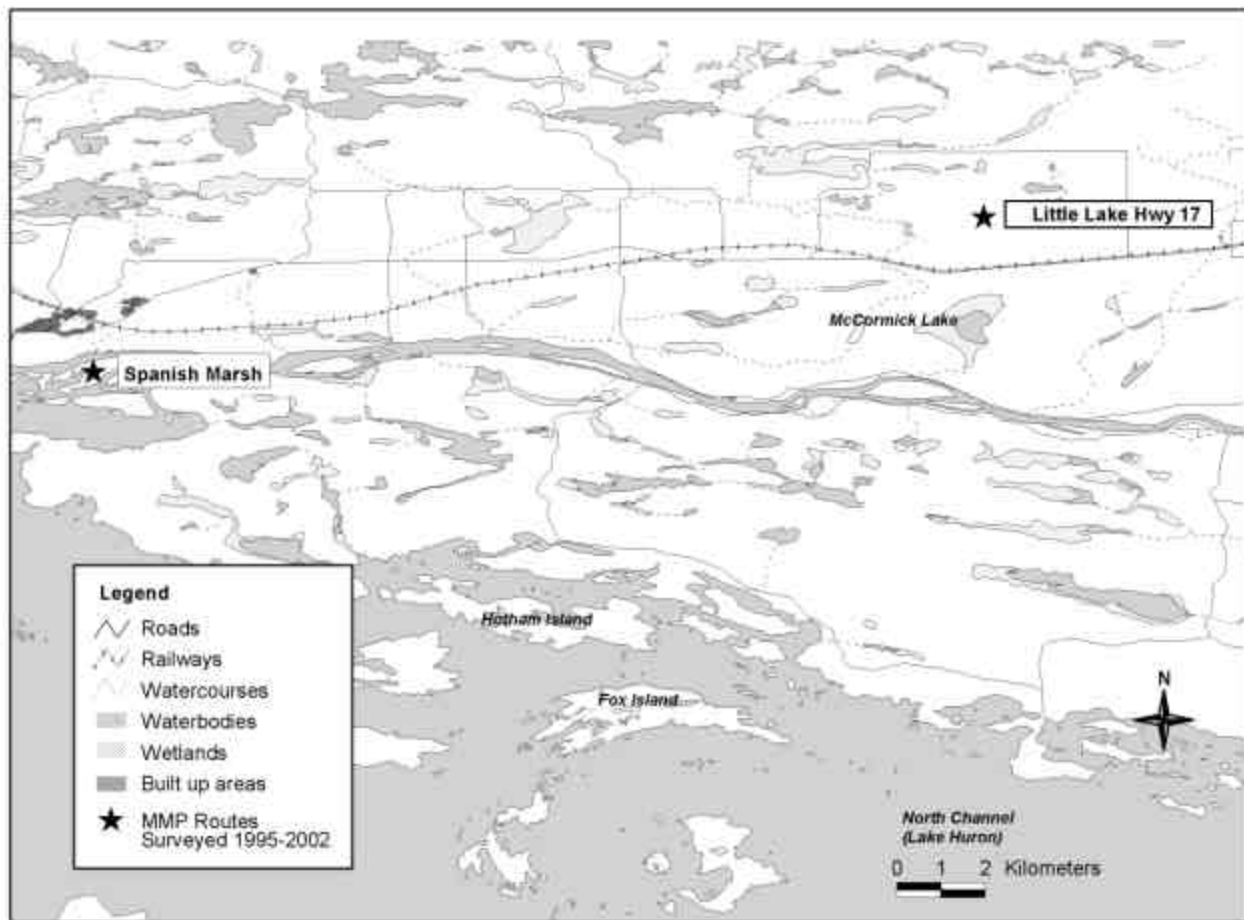
Recent progress reporting indicates that wetland habitat in the Spanish River Delta Marsh is not impaired, and that this former Area of Concern has been down-scaled to an Area of Recovery. Regardless, it is important to monitor habitats deemed to be in recovery to ensure long-term health. Until the area has been delisted from Area of Concern status, efforts should be made to establish MMP routes in appropriate marsh habitat. Efforts should be made to encourage MMP volunteers who survey routes within AOCs to rigorously collect habitat information at their survey stations. Complementary amphibian and marsh bird surveys should be conducted at all new and existing routes to permit a more definitive quantitative analysis of this AOC's wetland-dependent wildlife.

Volunteer Efforts

Three participants contributed over 24 person hours between 1995 and 2002 to the program at this AOC. In addition, many volunteer hours at non-AOC routes were contributed to produce results that were used for comparison purposes. Our thanks extend to surveyors who conducted the Spanish Harbour surveys: Amy Chabot, Wayne Selinger and Lillian Connelly.

The MMP is a joint program of Bird Studies Canada, Environment Canada (Canadian Wildlife Service), and the United States Environmental Protection Agency – Great Lakes National Program Office. Primary funding for development of these reports was provided by Environment Canada.

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MMP routes in the Spanish Harbour AOC.

Table 2. Marsh Monitoring Program Routes in the Spanish Harbour AOC.

Year	Route Type	# Routes	# Volunteers
1995	Amphibian	0	0
	Bird	1	1
	Both	1	1
1996	Amphibian	0	0
	Bird	0	0
	Both	1	1
1997	Amphibian	0	0
	Bird	0	0
	Both	0	0
1998	Amphibian	0	0
	Bird	0	0
	Both	0	0
1999	Amphibian	0	0
	Bird	0	0
	Both	0	0
2000	Amphibian	0	0
	Bird	0	0
	Both	0	0
2001	Amphibian	0	0
	Bird	0	0
	Both	0	0
2002	Amphibian	0	0
	Bird	0	0
	Both	0	0
Total	Amphibian	0	0
	Bird	1	1
	Both	1	1

Table 3. Amphibian species composition and abundance (maximum Call Level Code¹) at Spanish Harbour AOC MMP routes from 1995 through 2002. Shading denotes indicator species.

Amphibian Species	Little Lake - Highway 17	Spanish Harbour (maximum)
American Toad	1	1
Bullfrog	-	-
Chorus Frog	3	3
Gray Treefrog	2	2
Green Frog	-	-
Northern Leopard Frog	-	-
Spring Peeper	3	3
Wood Frog	-	-

¹ Call Level Code 1: Individuals can be counted; calls not simultaneous. Call Level Code 2: Calls distinguishable, some simultaneous calling. Call Level Code 3: Full chorus; calls continuous and overlapping.

Table 4. Marsh bird species composition and abundance (mean number per 10 stations) in the Spanish Harbour AOC from 1995 through 2002. Means for Spanish Harbour routes and Great Lakes basin non-AOC routes are given for comparison. Shading denotes indicator species and 'p' indicates that a species was present only outside of the survey stations.

Marsh Bird Species	Little Lake - Highway 17	Spanish Marsh	Spanish Harbour AOC Mean	Great Lakes Basin Mean
<i>Marsh Nesters</i>				
American Bittern		1.3	0.91	0.64
Canada Goose	1.7	p	0.46	4.56
Common Grackle	8.3		2.27	7.70
Common Yellowthroat		11.3	8.18	6.85
Mallard	5.0	2.5	3.18	5.36
Marsh Wren		37.5	27.27	8.30
Moorhen/Coot		p	p	0.73
Northern Harrier		p	p	0.09
Pied-billed Grebe		3.8	2.73	1.69
Red-winged Blackbird	16.7	13.8	14.55	44.89
Sandhill Crane		1.3	0.91	0.12
Sedge Wren		7.5	5.46	0.58
Song Sparrow	10.0	10.0	10.00	5.16
Sora		1.3	0.91	1.06
Swamp Sparrow	1.7	21.3	15.91	10.13
Yellow Warbler		3.8	2.73	6.31
<i>Water Foragers</i>				
Caspian Tern		1.3	0.91	0.33
Green Heron	p		p	0.49
Great Blue Heron	3.3	2.5	2.73	1.66
<i>Air Foragers</i>				
Bank Swallow	3.3		0.91	2.95
Barn Swallow	3.3		0.91	8.86
Common Nighthawk	3.3		0.91	0.27
Purple Martin	15.0		4.09	1.77
Tree Swallow	11.7	70.0	54.09	32.59

Table 5. Status assessment of marsh bird and amphibian indicator species abundance in the Spanish Harbour AOC from 1995 through 2002. ' - ' denotes values below the Great Lakes basin non-AOC average. ' 0 ' denotes values within the Great Lakes basin non-AOC average. ' + ' denotes values above the Great Lakes basin non-AOC average. Blank indicates that the species was not present and ' p ' indicates that a species was present only outside of the sample stations.

Route Name	Marsh Bird Indicator Species												Amphibian Indicator Species				
	AMBI	AMCO	BLTE	BWTE	COMO	COSN	LEBI	MAWR	MOOT	PBGR	SORA	VIRA	BULL	CHFR	MIFR	NLFR	SPPE
Little Lake - Highway 17														+			0
Spanish Marsh	0							+	p	0	0						
Spanish Harbour Overall Assessment	-							0	p	-	-			+			0

Table 6. Status of Spanish Harbour marshes from 1995 to 2002. ' - ' denotes values below the Great Lakes basin non-AOC average. ' 0 ' denotes values within the Great Lakes basin non-AOC average. ' + ' denotes values above the Great Lakes basin non-AOC average.

Route Name ²	Survey Type	Year	Number of Stations	Assessment of Marsh Bird and Amphibian Species Diversity				Overall Assessment ³
				Marsh Nesting Bird Diversity	Marsh Bird Indicator Species Diversity	Amphibian Species Diversity	Amphibian Indicator Species Diversity	
Little Lake - Highway 17 I, Tiny	Amph Bird	1995 - 1996	3 3	-	-	-	+	2
Spanish Marsh C, Huge	Bird	1995	8	0	-			1
Spanish Harbour Overall Assessment				-	-	-	+	2

¹ See the Marsh Monitoring Program's 1997 Final Technical Report for a detailed description of the scoring system.

² C = coastal, I =inland. Tiny (2 - 2.5 ha), Small (2.5 - 5 ha), Medium (5 - 25 ha), Huge (> 50 ha).

³ A score of 0, 1 or 2 indicates impairment, a score of 3, 4 or 5 indicates no apparent impairment and a score of 6, 7 or 8 indicates an above average marsh.