

Marsh Bird and Amphibian Communities in the St. Marys River (Canada and USA) 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 St. Marys River 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 St. Marys River 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 St. Marys River 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 St. Marys River AOC marshes.

Birds

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

Amphibians

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

- Since the program's initiation, two amphibian, two marsh bird and two routes surveyed for both amphibians and marsh birds have been monitored in the St. Marys River AOC. During the period from 1995 through 2002, the number of routes surveyed and number of volunteers were relatively low, but stable.
- Overall, nine amphibian species were recorded, including four amphibian indicator species (Chorus Frog, Mink Frog, Northern Leopard Frog, Spring Peeper). The most common species occurring at St. Marys River marshes was Green Frog and Spring Peeper, occurring at all three routes surveyed. In general, species were recorded at various levels (Call Level Codes 1, 2 and 3).
- Overall, 27 species of marsh nesters were recorded in the St. Marys River AOC – a very high level of diversity. Further, ten (American Bittern, American Coot, Black Tern, Blue-winged Teal, Common Moorhen, Common Snipe, Marsh Wren, Pied-billed Grebe, Sora, Virginia Rail) of 12 marsh bird indicator species were recorded in the St. Marys River AOC. Black Tern was the most abundant nesting species, followed by Red-winged Blackbird, Canada Goose and Swamp Sparrow. Common Tern was the most abundant water forager species and Tree Swallow was the most abundant aerial forager.

- Of the four amphibian indicator species present in the St Clair River AOC, Mink Frog and Northern Leopard Frog relative occurrence scored above the average, and Chorus Frog and Spring Peeper relative abundance scored within the average of that for these species at Great Lakes basin non-AOC routes. Abundance of one marsh bird indicator species (Pied-billed Grebe) that occurred in the St. Marys River AOC scored above the average, two marsh bird indicator species (Black Tern and Marsh Wren) scored within the average and seven marsh bird indicator species (American Bittern, American Coot, Blue-winged Teal, Common Moorhen, Common Snipe, Sora, Virginia Rail) scored below the average of that for these species at Great Lakes basin non-AOC routes.
- St. Marys River marsh bird indicator species diversity and marsh nesting bird species diversity scored below the average of those at Great Lakes basin non-AOC routes. Total amphibian species diversity and amphibian indicator species diversity scored above the average of those at Great Lakes basin non-AOC routes. Overall, this AOC is apparently not impaired in its ability to support marsh dependent species.

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 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 St. Marys River AOC

Since the program's initiation, two amphibian, two marsh bird and two routes surveyed for both amphibians and marsh birds have been established in the St. Marys River AOC. During the period from 1995 through 2002, number of routes surveyed and number of volunteers were relatively low, but stable.

A number of habitat rehabilitation projects have been proposed in the St. Marys River AOC that address loss of marsh habitat, in addition to shoreline and riverine habitats. Such sites should be monitored by the MMP.

There are additional marshes in the St. Marys River AOC where routes could be established and existing routes where complementary marsh bird or amphibian surveys would permit a more definitive evaluation of the AOC's wetland-dependent wildlife. Volunteer recruitment to fill these needs is ongoing.

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

Marshes in the St. Marys River AOC were all huge in size. Habitat data were collected for three St. Marys River marshes and all were classified as coastal marshes, thus affected by fluctuations in St. Marys River water levels.

The number of amphibian species in the St. Marys River AOC ranged from three to nine per route (Table 3). In total, nine amphibian species were recorded, including four amphibian indicator species (Chorus Frog, Mink Frog, Northern Leopard Frog, Spring Peeper). According to the Ontario Herpetofaunal Summary, all five amphibian indicator have historically been present in this AOC. The most common species occurring at St. Marys River marshes were Green Frog and Spring Peeper, which occurred at all three routes surveyed. In general, species were recorded at various levels (Call Level Codes 1, 2 and 3).

The number of marsh nesters at St. Marys River AOC routes ranged from five to 23 (Table 4). In total, 27 species of marsh nesters were recorded in the St. Marys River AOC – a very high level of diversity. Further, 10 (American Bittern, American Coot, Black Tern, Blue-winged Teal, Common Moorhen, Common Snipe, Marsh Wren, Pied-billed Grebe, Sora, Virginia Rail) of 12 marsh bird indicator species were recorded in the St. Marys River AOC. According to the Ontario Breeding Bird Atlas database, only five indicator species have historically been recorded in this AOC: American Bittern, Black Tern, Blue-winged Teal, Common Snipe and Marsh Wren. Densities for nine of 27 marsh nesting species were higher at St. Marys River AOC routes than for routes at Great Lakes basin non-AOC routes. Black Tern was the most abundant nesting species, followed by Red-winged Blackbird, Canada Goose and Swamp Sparrow.

Four water foragers and five aerial foragers were recorded in the St. Marys River AOC – a high level of diversity (Table 4). Common Tern was the most abundant water forager species and Tree Swallow was the most abundant aerial forager. Densities were higher at St. Marys River for routes at Great Lakes basin non-AOC routes for one (Common Tern) of four water foraging species and for two (Cliff Swallow and Tree Swallow) of five aerial foraging species.

Conclusions

Of the four amphibian indicator species present in the St Marys River AOC, Mink Frog and Northern Leopard Frog relative occurrence scored above the average, and Chorus Frog and Spring Peeper relative abundance scored within the average of that for these species at Great Lakes basin non-AOC routes (Table 5). Abundance of one marsh bird indicator species (Pied-billed Grebe) that occurred in the St. Marys River AOC scored above the average, two marsh bird indicator species (Black Tern and Marsh Wren) scored within the average and seven marsh bird indicator species (American Bittern, American Coot, Blue-winged Teal, Common Moorhen, Common Snipe, Sora, Virginia Rail) scored below the average of that for these species at Great Lakes basin non-AOC routes.

St. Marys River marsh bird indicator species diversity and marsh nesting bird species diversity scored below the average of those at Great Lakes basin non-AOC routes (Table 6). Total amphibian species diversity and amphibian indicator species diversity scored above the average of those at Great Lakes basin non-AOC routes. The St. Marys River AOC apparently is impaired in its ability to support a high diversity of marsh bird species, however, there is an apparent wide array of amphibian species in this AOC (Table 6). Overall, this AOC is apparently not impaired in its ability to support marsh dependent species.

Recommendations

Efforts should be made to continue to rehabilitate marsh habitat and to monitor marsh bird and amphibian populations to properly address the effects of habitat loss. MMP routes should be established at all marsh rehabilitation projects. Efforts should be made to encourage all MMP volunteers surveying routes within AOCs to rigorously collect habitat information at their survey stations. Complementary amphibian and marsh bird surveys

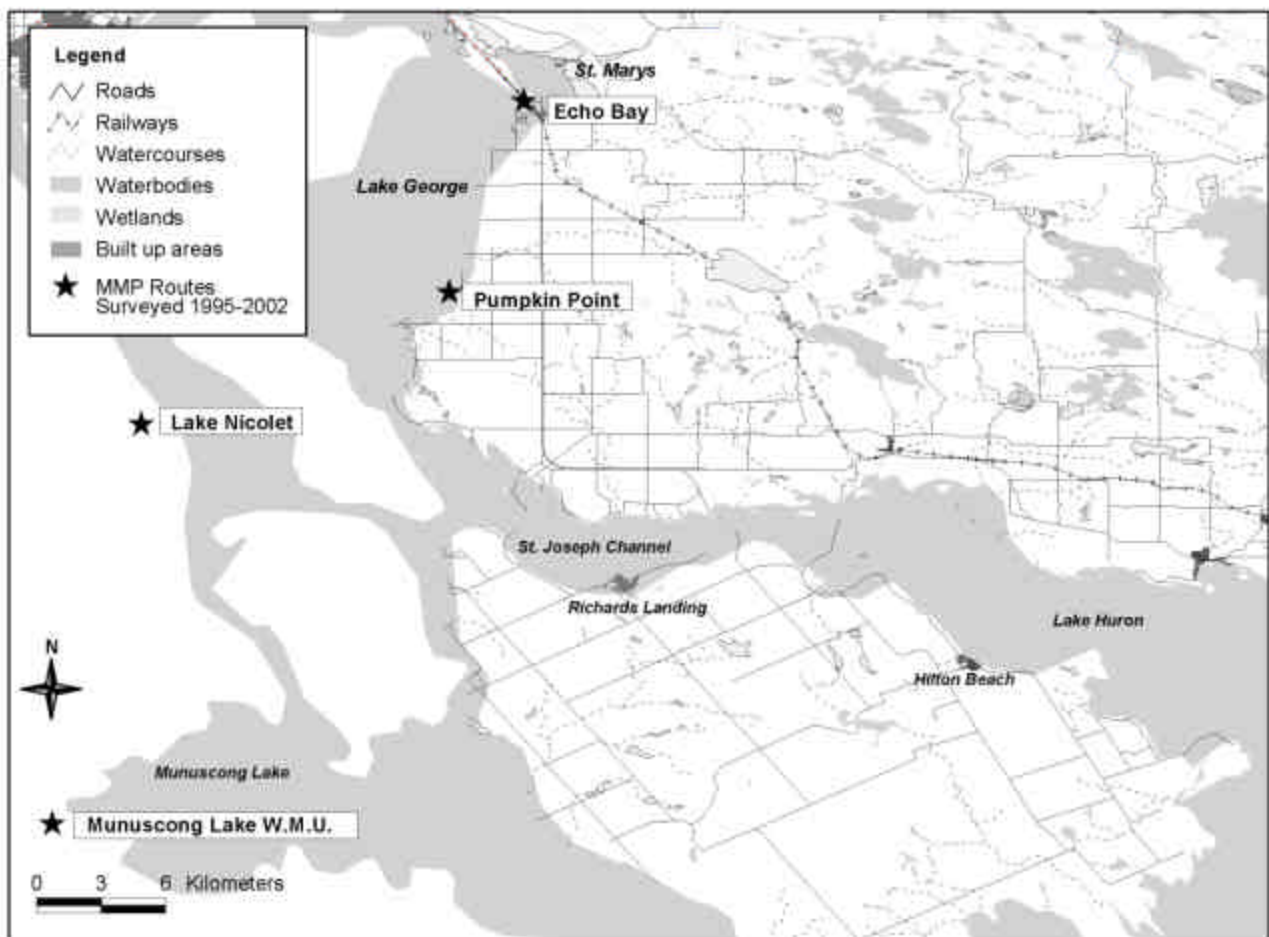
should be conducted at all new and existing routes to permit a more definitive quantitative analysis of this AOC's wetland-dependent wildlife.

Volunteer Efforts

Five participants contributed over 120 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 the dedicated participants who conducted the St. Marys River surveys: Euan Aitken, Mike Bilodeau, Edward Czerwinski, Elaine Mallory and Janice McKee.

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MMP routes in the St. Mary's River AOC.

Table 2. Marsh Monitoring Program Routes in the St. Marys River (Canada and USA) AOC.

Year	Route Type	# Routes	# Volunteers
1995	Amphibian	0	0
	Bird	2	2
	Both	0	0
1996	Amphibian	0	0
	Bird	1	1
	Both	2	2
1997	Amphibian	0	0
	Bird	1	1
	Both	1	1
1998	Amphibian	1	1
	Bird	1	1
	Both	0	0
1999	Amphibian	0	0
	Bird	0	0
	Both	1	1
2000	Amphibian	0	0
	Bird	2	2
	Both	0	0
2001	Amphibian	1	1
	Bird	1	1
	Both	0	0
2002	Amphibian	0	0
	Bird	0	0
	Both	1	1
Total	Amphibian	2	2
	Bird	2	3
	Both	2	2

Table 3. Amphibian species composition and abundance (maximum Call Level Code¹) at St. Marys River (Canada and USA) AOC MMP routes from 1995 through 2002. Shading denotes indicator species.

Amphibian Species	Munuscong Lake W.M.U.²	Echo Bay	Pumpkin Point	St. Marys River (maximum)
American Toad	-	3	2	3
Chorus Frog	-	1	-	1
Gray Treefrog	-	2	3	3
Green Frog	1	1	1	1
Mink Frog	-	1	1	1
Northern Leopard Frog	-	1	2	2
Pickerel Frog	-	1	1	1
Spring Peeper	3	3	3	3
Wood Frog	1	1	-	1

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.

² W.M.U. = Wildlife Management Unit

Table 4. Marsh bird species composition and abundance (mean number per 10 stations) in the St. Marys River (Canada and U.S.A) - AOC from 1995 through 2002. Means for St. Marys River 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 sample stations.

Marsh Bird Species	Lake Nicolet	Munuscong Lake W.M.U	Echo Bay	Pumpkin Point	St. Marys River AOC Mean	Great Lakes Basin Mean
<i>Marsh Nesters</i>						
American Black Duck				p	p	0.10
Alder Flycatcher				p	p	0.34
American Bittern		p	p	1.1	0.44	0.64
American Coot			0.7	1.1	0.64	0.99
American Wigeon		10.0	0.7		1.37	0.02
Black Tern		350.0	83.7	23.0	75.25	3.87
Blue-winged Teal			0.7	1.8	0.93	0.77
Canada Goose		70.0	2.0	p	8.82	4.56
Common Grackle			0.3	0.7	0.39	7.70
Common Moorhen	10.0			0.4	1.91	1.56
Common Snipe		p	0.3	p	0.10	0.38
Common Yellowthroat			6.0	1.1	2.21	6.41
Eastern Kingbird		5.0	0.3		0.69	1.51
Lincoln's Sparrow			1.0		0.29	0.00
Mallard	p	15.0	3.3	3.2	4.07	5.36
Marsh Wren			5.3		1.57	8.30
Northern Shoveler		p			p	0.08
Pied-billed Grebe	6.7	5.0	4.7	6.0	5.59	1.69
Ring-necked Duck		15.0	1.0	p	2.06	0.40
Red-winged Blackbird	26.7	25.0	31.0	16.5	23.58	44.89
Sandhill Crane		p	p	2.4	0.98	0.12
Sedge Wren			0.3	p	0.10	0.58
Song Sparrow			3.0		1.47	5.16
Sora		5.0	0.7		0.78	1.06
Swamp Sparrow		5.0	14.7	2.5	6.52	10.13
Virginia Rail	3.3	10.0	2.7		1.37	10.13
Yellow Warbler			3.7	1.1	1.52	6.31
<i>Water Foragers</i>						
Caspian Tern				p	p	0.33
Common Tern	p		0.7	3.0	1.42	0.84
Green Heron				p	p	0.52
Great Blue Heron		5.0	p	0.8	0.93	1.66
<i>Air Foragers</i>						
Bank Swallow					0.20	2.95
Barn Swallow			2.7		0.78	8.86
Cliff Swallow			1.3		0.39	0.25
Purple Martin			0.7		0.20	1.77
Tree Swallow	40.0	305.0	23.3	12.9	55.10	32.59

Table 5. Status assessment of marsh bird and amphibian indicator species abundance in the St. Marys River (Canada and USA) 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
Lake Nicolet					+						+	0					
Munuscong Lake W.M.U.	p		+			p				0	0						0
Echo Bay	p	0	+	0		0		-		+	0	0		0	+	0	+
Pumpkin Point	0	0	+	0	0	p				+					0	+	0
St. Marys River Overall Assessment	-	-	0	-	-	-		0		+	-	-		0	+	+	0

Table 6. Status of St. Marys River (Canada and USA) marshes from 1995 to 2002¹. ' - ' 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	
Munuscong Lake W.M.U. C, Huge	Amph Bird	1996	1 4	+	0	+	+	7
Echo Bay C, Huge	Amph Bird	1995 - 2001	5 4	-	-	+	+	4
Pumpkin Point C, Huge	Bird	1995, 1997, 1998, 2000 - 2002	3	-	-	+	0	3
St. Marys River Overall Assessment				-	-	+	+	4

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 mar: