

Marsh Bird and Amphibian Communities in the Detroit 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 Detroit 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 Detroit River AOC wetlands are impaired. This report should be read in conjunction with the context analyses description in the Marsh Monitoring Program: Areas of Concern Summary Reports 1995 – 2002.

Highlights of the MMP's Detroit 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 Detroit River AOC marshes.

Birds

- American Bittern (AMBI)
- American Coot (AMCO)
- Black Tern (BLTE)
- T** 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)
- Sora
- T** Virginia Rail (VIRA)

Amphibians

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

- Since the program's initiation, one amphibian, three marsh bird, and two routes surveyed for both amphibians and marsh birds have been monitored in the Detroit River AOC. During the period from 1995 through 2002, number of routes surveyed remained relatively stable with slight increases in 2001 and 2002.
- Overall, seven amphibian species were recorded, including four amphibian indicator species (Bullfrog, Chorus Frog, Northern Leopard Frog, Spring Peeper). The most common species were Bullfrog (an indicator species) and Green Frog, each occurring at three of four routes surveyed. Species were recorded at low levels (Call Level Codes 1 and 2) for all routes except Holiday Beach, where they were recorded at moderate to high levels.
- Overall, 16 species of marsh nesters were recorded in the Detroit River AOC – a moderate level of diversity. Red-winged Blackbird was the most abundant nesting species, followed by Common Grackle, Mallard and Common Yellowthroat. Belted Kingfisher was the most abundant water forager species and Tree Swallow was the most abundant aerial forager.
- Five of the 12 of the marsh bird indicator species were recorded in the Detroit River AOC. Abundance of three marsh bird indicator species (Marsh Wren, Common Moorhen/American Coot, Pied-billed Grebe) scored below the average of Great Lakes basin non-AOC routes. Two marsh bird indicator species (Blue-winged Teal

and Virginia Rail) were only present outside of the MMP survey station boundary. Of the four amphibian indicator species present, Bullfrog, Chorus Frog and Northern Leopard Frog relative occurrence scored above the average of those 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.

- Marsh bird indicator species and marsh nesting bird diversity in the Detroit River AOC scored below the average of those at Great Lakes basin non-AOC routes. In contrast, total amphibian species diversity and amphibian indicator species diversity scored within 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.

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 established 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 amphibians 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 Detroit River AOC

Since the program's initiation, one amphibian route and three marsh bird, and two routes surveyed for both amphibians and marsh birds have been monitored in the Detroit River AOC. During the period from 1995 through 2002, number of routes surveyed were relatively stable, but showed moderate annual increases between 1999 and 2002.

A number of habitat rehabilitation projects have been proposed in the Detroit 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 Detroit 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 Detroit River AOC ranged from medium to huge in size, which is in itself a positive aspect. All five marshes surveyed in the Detroit River AOC were classified as coastal marshes and thus were affected by fluctuations in the Detroit River's water levels. Monitoring of two Detroit River marshes (Ruwe Marsh, Ruwe Marsh Amphibians) occurred at marsh habitat rehabilitation sites.

The number of amphibians occurring at Detroit River AOC routes ranged from one to seven per route (Table 3). Overall, seven amphibian species were recorded, including four amphibian indicator species (Bullfrog, Chorus Frog, Northern Leopard Frog, Spring Peeper). According to the Ontario Herpetofaunal Summary records, the following species likely occur in marshes associated with this AOC: American Toad, Bullfrog, Chorus Frog, Gray Treefrog, Green Frog, Northern Leopard Frog and Wood Frog. The most common species occurring at Detroit River marshes were Bullfrog (an indicator species) and Green Frog, each occurring at three of four routes surveyed. Species were recorded at low to moderate levels (Call Level Codes 1 and 2) at Ruwe and Ojibway marsh routes, and moderate (Call Level Codes 1, 2 and 3) at Holiday Beach marsh.

The number of marsh nesters occurring at Detroit River AOC routes ranged from two to 14 (Table 4). Overall, 16 species of marsh nesters were recorded in the Detroit River AOC – a moderate level of diversity. Further, only five (Blue-winged Teal, Marsh Wren, Common Moorhen/American Coot, Pied-billed Grebe, Virginia Rail) of 12 of the marsh bird indicator species were recorded in the Detroit River AOC. According to the Ontario Breeding Bird Atlas database, all 12 of the marsh bird indicator species have historically been recorded in this area, but at low densities. Densities of all marsh nesting species at Detroit River routes were below those at Great Lakes basin non-AOC routes. Red-winged Blackbird was the most abundant nesting species, followed by Common Grackle, Mallard and Common Yellowthroat.

Five water foragers and three aerial foragers were recorded in the Detroit River AOC (Table 4) – again a moderate level of diversity. Belted Kingfisher was the most abundant water forager species followed by Great Egret, and Tree Swallow was the most abundant aerial forager. Densities of water foragers were higher at Detroit River routes than at Great Lakes basin non-AOC route averages for three (Belted Kingfisher, Great Egret, Green Heron) of five species and were higher for one (Barn Swallow) of three aerial foraging species.

Conclusions

Of the four amphibian indicator species present, Bullfrog, Chorus Frog and Northern Leopard Frog relative abundance scored above the average of those at Great Lakes basin non-AOC routes, however, Spring Peeper relative occurrence scored below the average of those at Great Lakes basin non-AOC routes (Table 5). Abundance of three marsh bird indicator species (Marsh Wren, Common Moorhen/American Coot, Pied-billed Grebe) scored below the average of Great Lakes basin non-AOC routes for these species (Table 5). Two marsh bird indicator species (Blue-winged Teal and Virginia Rail) were present only outside of the MMP survey station boundary. Thus, no marsh bird indicator species scored within average or above the average of those at Great Lakes basin non-AOC routes.

Marsh bird indicator species and marsh nesting bird diversity in the Detroit River AOC scored below the average of those at Great Lakes basin non-AOC routes (Table 6). In contrast, total amphibian species diversity and amphibian indicator species diversity scored within the average of those at Great Lakes basin non-AOC routes. The Detroit River AOC does not appear to be impaired in its ability to support a high diversity of amphibian species, however this AOC is apparently impaired in its ability to support even a moderate diversity of marsh bird species (Table 6). Overall, this AOC is apparently 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

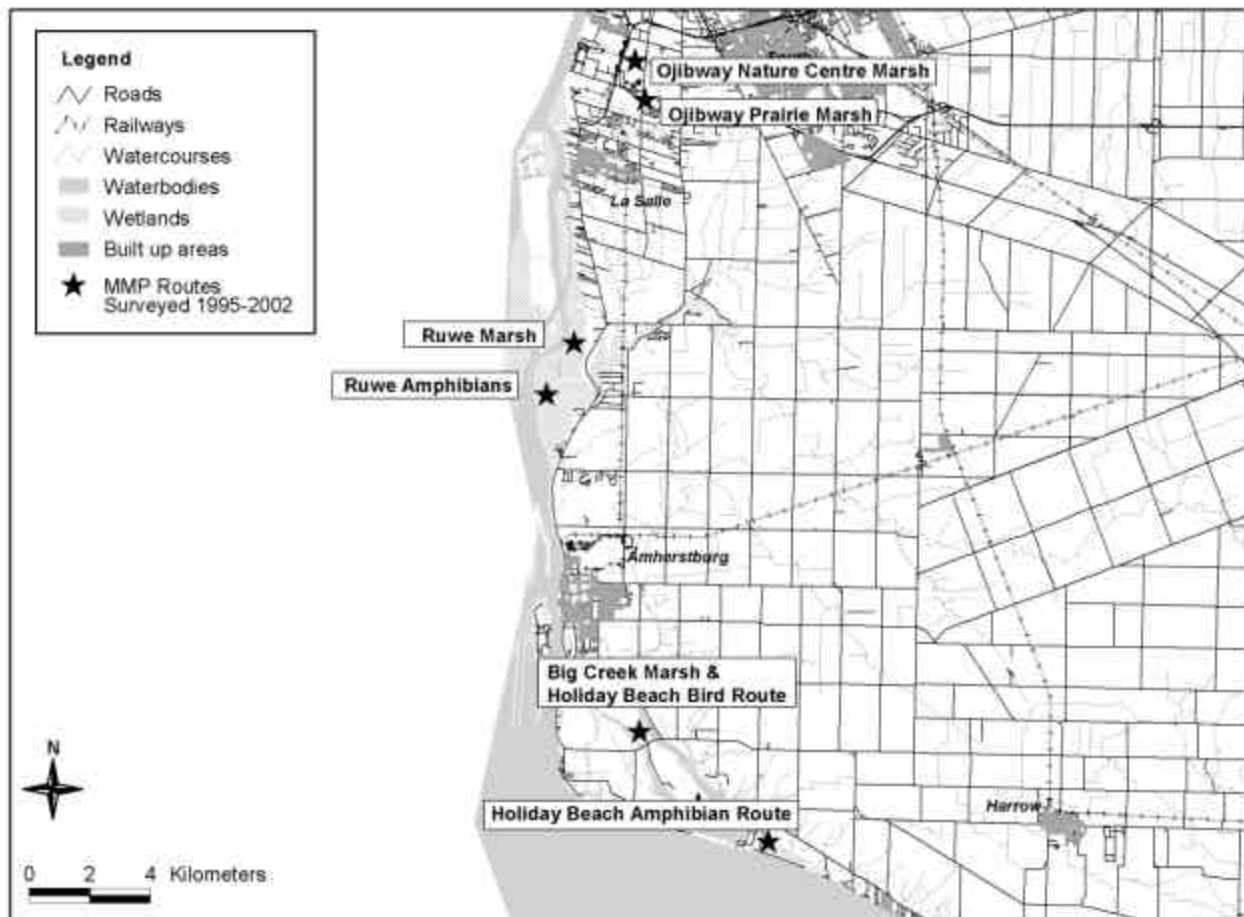
should be conducted at all new and existing routes to permit a more definitive quantitative analysis of this AOC's wetland-dependent wildlife.

Volunteer Efforts

Four participants contributed over 128 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 Detroit River surveys: Dan Bissonnette, Betty Learmouth, Corey Reeves and Dustin Reeves.

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MMP routes in the Detroit River AOC.

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

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

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

Amphibian Species	Holiday Beach	Ojibway Nature Center Marsh	Ojibway Prairie Marsh	Ruwe Amphibians	Detroit River AOC (maximum)
American Toad	3	-	1	-	3
Bullfrog	2	2	2	-	2
Chorus Frog	3	-	-	-	3
Green Frog	3	-	1	1	3
Northern Leopard Frog	3	-	-	-	3
Spring Peeper	1	-	-	-	1
Wood Frog	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.

Table 4. Marsh bird species composition and abundance (mean number per 10 stations) in the Detroit River (Canada and USA) AOC from 1995 through 2002. Means for Detroit River 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	Big Creek Marsh & Holiday Beach	Ojibway Nature Center Marsh	Ojibway Prairie Marsh	Ruwe Marsh	Detroit River AOC Mean	Great Lakes Basin Mean
<i>Marsh Nesters</i>						
Blue-winged Teal				p	p	0.77
Canada Goose	1.1			p	0.30	4.56
Common Grackle	2.2	30.0		p	6.06	7.70
Common Yellowthroat	5.6			0.7	1.70	6.41
Eastern Kingbird	p			1.3	0.36	1.51
Mallard	3.3		13.3	p	4.55	5.36
Marsh Wren	1.1				0.30	8.30
Moorhen/Coot				1.3	0.36	0.73
Mute Swan	p			p	p	0.66
Pied-billed Grebe	1.1			3.3	1.21	1.69
Prothonotary Warbler	p				p	0.01
Red-winged Blackbird	27.8	45.0	53.3	26.0	37.39	44.89
Song Sparrow	1.1		p	1.3	0.67	5.16
Swamp Sparrow	2.2			0.7	0.79	10.13
Virginia Rail				p	p	3.12
Yellow Warbler	4.4			1.3	1.58	6.31
<i>Water Foragers</i>						
Black-crowned Night Heron	p			1.3	0.36	0.42
Belted Kingfisher		10.0		1.3	2.18	0.53
Great Egret	6.7			0.7	2.00	0.47
Great Blue Heron	1.1			p	0.30	1.66
Green Heron	p	10.0		p	1.82	0.52
<i>Air Foragers</i>						
Barn Swallow	15.6	80.0			18.79	8.86
Purple Martin	3.3			0.7	1.09	1.77
Tree Swallow	31.1		3.3	73.3	29.39	32.59

Table 5. Status assessment of marsh bird and amphibian indicator species abundance in the Detroit 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
Big Creek Marsh and Holiday Beach								0		0							
Holiday Beach													+	+		+	-
Ojibway Nature Center Marsh													0				
Ojibway Praire Marsh													+				
Ruwe Marsh				p					0	+		p					
Detroit River Overall Assessment				p				-	-	-		p	+	+		+	-

Table 6. Status of Detroit 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	
Big Creek Marsh and Holiday Beach <small>C, Huge</small>	Bird	2000 - 2002	6	-	-			0
Holiday Beach <small>C, Medium</small>	Amph	1999 - 2001	4			+	+	4
Ruwe Marsh <small>R, C, Huge</small>	Bird	1995 - 1999	3	-	-			0
Ruwe Marsh Amphibians <small>R, C, Large</small>	Amph	1996	1			-	-	0
Detroit River Overall Assessment				-	-	0	0	2

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

² R = rehabilitation site, 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.