

Marsh Bird and Amphibian Communities in the St. Lawrence River AOC, 1995 - 1996



Purpose of the MMP

The Marsh Monitoring Program (MMP) was established to provide a baseline survey of marsh bird and amphibian populations and their habitats in marshes within the Areas of Concern (AOCs) in the Great Lakes basin, at sites where rehabilitation and restoration efforts have taken place or are planned in the AOCs, and in many other sites across the Great Lakes basin. Marsh bird surveys were first undertaken in the Canadian and binational AOCs in 1994. In 1995, the program expanded to include surveys of calling amphibians. Over 300 volunteers have surveyed marsh bird and amphibian populations and their habitats under the MMP to date. Information on the abundance and diversity of these species provides useful, and fairly easily obtainable, indicators of habitat quality, structure and areal extent.

Purpose of this Report

This report summarizes the results of the MMP surveys in the St. Lawrence River AOC in 1995 and 1996. It also explains the set of indicators used by the MMP to assess marsh quality and describes the significance of the MMP's results for the St. Lawrence River AOC within the context of this set of indicators.

Indicator Species

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

A ✓ indicates those found in the St. Lawrence River AOC marshes

Birds

- ✓ Pied-billed Grebe
- ✓ American Bittern
- Least Bittern
- ✓ Blue-winged Teal
- ✓ Black Tern
- ✓ American Coot
- ✓ Common Moorhen
- ✓ C. Moorhen/A. Coot
- ✓ Virginia Rail
- ✓ Sora
- ✓ Common Snipe
- ✓ Marsh Wren

Amphibians

- ✓ Bullfrog
- ✓ Leopard Frog
- ✓ Chorus Frog
- Mink Frog
- ✓ Spring Peeper



Highlights of the MMP's St. Lawrence River Results

- Marsh bird surveys were first undertaken on 4 routes in the St. Lawrence River AOC in 1994. Five routes were monitored for marsh birds in 1995 and 6 routes were monitored for marsh birds in 1996. Five routes were monitored for amphibians in 1995 and 7 routes were monitored in 1996. In total, 8 amphibian routes and 7 marsh bird routes have been established to date.
- The number of amphibian species ranged from 4 to 7 per route. Overall, 9 species were recorded. Densities of most species were moderate to high (Call Level Codes 2 or 3).
- Four of the 5 expected amphibian indicator species were present in the St. Lawrence River AOC; only mink frog was not present. Three species scored as average or above average in abundance; chorus frog scored below average.
- The number of marsh nesters per route ranged from 7 to 20 species. Overall, 25 species of marsh nester and 10 foragers were recorded. In general, densities were equal to or greater than the Great Lakes basin non-AOC averages.
- The St. Lawrence River AOC supported 11 of the 12 marsh bird indicator species; only Least Bittern was not present. Abundances of 9 species scored as average or above average. Sora and American Bittern scored below average in abundance.
- While the degree of impairment varied for individual marshes, overall, the St. Lawrence River AOC does not appear to be impaired in terms of its present capacity to support healthy marsh bird and amphibian populations.

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 frog calls	3 minutes at each station	warm, wet weather with little or no wind

A route, consisting of up to 8 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 on foot, but can be surveyed by canoe or boat. Marshes must be a minimum of 2 hectares and if very large, may support more than one route. The stations must be 500 m apart for amphibian surveys and 250 m apart for bird surveys. The number 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. Each MMP volunteer is provided with a training kit which fully explains the survey methods. The kit also includes a copy of the MMP Training Tape which aids volunteers in learning the songs and calls of the common marsh birds and amphibians. For further information on the methods, please refer to the 1997 edition of the *MMP Training Kit and Instructions for Surveying Marsh Birds, Amphibians And Their Habitats*, which is available from the Long Point Bird Observatory.



MMP in St. Lawrence River

Marsh bird surveys were first undertaken on 4 routes (Bainsville Bay Marsh, Bainsville Isle Marsh and 2 routes in Cooper Marsh) in the St. Lawrence River AOC in 1994. In 1995, the program expanded to include surveys for amphibians; 5 routes were monitored for marsh birds and 5 routes were monitored for amphibians. In 1996, 7 routes were monitored for amphibians and 6 routes were monitored for marsh birds. In total, 8 amphibian and 7 marsh bird routes have been established in the St. Lawrence River AOC to date.

Habitat rehabilitation projects have been initiated in the St. Lawrence River AOC which address loss of marsh habitat, in addition to shoreline and riverine habitats. Additional survey routes could be established at a few remaining marshes in the St. Lawrence River AOC, in particular in the United States. Complementary marsh bird and amphibian surveys on all existing and proposed sites would permit a more definitive analysis. Volunteer recruitment to fill these needs is ongoing.

Table 2. Marsh Monitoring Program Routes in the St. Lawrence River AOC.

Year	Route Type	# Routes	# Volunteers
1994	Bird	4	1
1995	Amphibian	1	1
	Bird	1	1
	Both	4	4
1996	Amphibian	3	3
	Bird	2	2
	Both	4	5
Total	Amphibian	3	3
	Bird	2	2
	Both	5	6



To become involved, please contact the MMP Coordinator, Long Point Bird Observatory at (519) 586-3531 (phone), (519) 586-3532 (fax) or by email at aqsurvey@nornet.on.ca.

Results

The St. Lawrence River AOC is a bi-national AOC, but most of the marshes suitable for monitoring occur on the Canadian side of the river. The marshes in the St. Lawrence River AOC were mainly dominated by cattail; purple loosestrife and water willow (both known to be of little value to marsh birds and amphibians) were co-dominant at several stations. Grass/sedge, common reed, wild rice and rush/bulrush occurred as co-dominants at a few stations.

The number of amphibians per route ranged from 4 to 7 (Table 3). Overall, 9 species were recorded, including 4 of the 5 amphibian indicator species (Table 3). According to the Ontario Herpetofaunal Summary, the St. Lawrence River AOC formerly supported spring peeper, chorus frog, northern leopard frog and bullfrog. The range of mink frog includes the AOC, but it has not been reported from there. With 7 species, the Glengarry Bridges Marsh and Coopers Marsh had the highest levels of diversity. Green frog and spring peeper occurred on 6 of the 7 routes. With the exception of chorus frog (an indicator species) and pickerel frog, densities of most species were recorded as moderate or high (Call Level Code 2 or 3).

The number marsh nesters on routes ranged from 7 to 20 (Table 4). Overall, 25 species of nester, including 11 of the 12 marsh bird indicator species were recorded in the St. Lawrence River AOC — a high level of diversity (Table 4). Although Least Bittern was not present in 1995 and 1996, it was recorded in 1994 in the Bainsville Marsh. According to the Ontario Breeding Bird Atlas database, the St. Lawrence River AOC formerly supported 9 of the 12 indicator species. Much of the marsh bird diversity was contributed by the Bainsville Marsh and Coopers Marsh. Densities of most species were well within the levels expected based on the Great Lakes basin non-AOC averages; many exceeded those levels. As is typical of marshes in the Great Lakes basin, Red-winged Blackbird was the most common marsh nesting species. Marsh Wrens were also quite prominent, reflecting the domination of the marshes by cattails. Other common species included Swamp Sparrow and Common Yellowthroat.

Five species of water foragers and 5 air foragers were recorded in the AOC — again a fairly high diversity (Table 4). The most common water forager was Green Heron. Black-crowned Night-Heron, a species of conservation interest in Ontario, was present at densities higher than the Great Lakes basin non-AOC average. The other 3 water foragers occurred at densities lower than average. The most common air forager was Tree Swallow. Purple Martin was the only air forager which occurred at densities lower than expected.

Conclusions

American Coot, Black Tern, Blue-winged Teal, Common Moorhen and Pied-billed Grebe abundances scored as average and Common Snipe, Marsh Wren, Common Moorhen or American Coot (the calls of these 2 species are difficult to distinguish) and Virginia Rail scored above average in abundance (Table 5). Only Sora and American Bittern scored below average in abundance. Northern leopard frog and spring peeper abundance scored as average, bullfrog abundance scored above average and chorus frog scored below average in abundance (Table 5).

Marsh bird and amphibian diversity Coopers Marsh were above average (Table 6). However, all of the other marshes appeared to have some degree of impairment (Table 6). Overall, neither the marsh bird diversity nor the marsh bird indicator species diversity appeared to be impaired. While the amphibian diversity in the St. Lawrence River AOC appeared to be impaired, the indicator species diversity scored as average, and thus did not appear to be impaired. From an ornithological standpoint, the St. Lawrence River AOC does not appear to be impaired. However, from a herpetological standpoint, it would appear that the St. Lawrence River AOC is moderately impaired. Overall, the St. Lawrence River AOC does not appear to be impaired in terms of its ability to support healthy marsh bird and amphibian populations (Table 6).

Recommendations

Efforts should be made to continue to rehabilitate marsh habitat and to monitor marsh bird and amphibian populations to properly address loss of habitat. MMP routes should be established at all marsh rehabilitation projects. Complementary amphibian and marsh bird surveys should be conducted on all routes.

Table 3. Amphibian species composition and abundance (maximum Call Level Code ¹) in the St. Lawrence River AOC in 1995 and 1996. Shading denotes indicator species.

Amphibian Species	Bainville Marshes	Coles Creek Marsh	Cooper Marsh	Glengarry Bridges	Fly Creek Retention Pond	Loch Gary Marsh	Summerstown Marsh
American Toad	—	—	1	1	1	1	1
Bullfrog	1	3	2	—	2	1	—
Chorus Frog	—	—	—	1	—	—	—
Gray Treefrog	—	3	1	2	—	—	2
Green Frog	2	3	1	1	—	1	1
N. Leopard Frog	3	—	1	1	1	1	—
Pickerel Frog	—	—	1	—	—	—	—
Spring Peeper	3	1	3	3	—	3	3
Wood Frog	—	—	—	2	—	—	2

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 overlapping.

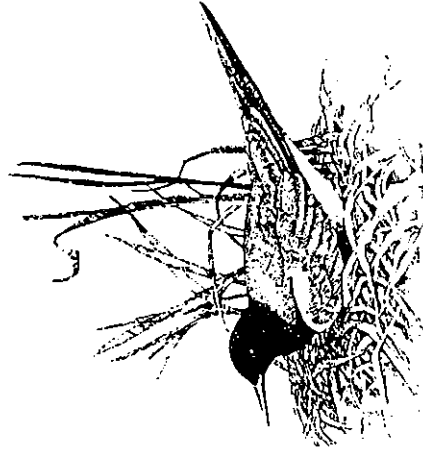


Table 4. Marsh bird species composition and abundance (mean number per 10 stations) in the St. Lawrence River AOC in 1995 and 1996. Shading denotes indicator species and "p" indicates that a species was present only outside of the sample stations.

Marsh Bird Species	Bainville Marshes	Coles Creek Marsh	Cooper Marsh	Floral Park Marsh	Guindon Park Marsh	Loch Gary Marsh	St. Lawrence River AOC Mean	Great Lakes Basin Mean
<i>Marsh Nester</i>								
Alder Flycatcher	p	—	—	—	—	—	p	0.3
American Bittern	0.6	—	p	—	—	—	0.2	0.8
American Coot	1.7	—	1.2	—	—	—	0.9	1.4
American Wigeon	—	—	p	—	—	—	p	0.1
Black Tern	27.8	—	—	—	—	p	7.8	6.6
Blue-winged Teal	—	—	4.2	—	—	—	1.7	1.0
Canada Goose	—	—	3.1	—	—	—	1.3	4.2
Common Grackle	1.1	30.0	6.5	—	—	—	4.8	6.8
Common Moorhen	3.9	—	3.1	—	—	—	2.3	2.2
Common Moorhen/American Coot	5.0	—	—	—	—	1.0	1.6	1.0
Common Snipe	p	—	11.2	—	—	3.0	5.0	0.5
Common Yellowthroat	0.6	20.0	3.5	—	—	13.0	4.8	6.3
Eastern Kingbird	2.2	—	—	—	—	6.0	1.6	1.5
Gadwall	—	—	p	—	—	—	p	0.1
Little Gull	p	—	—	—	—	—	p	0.1
Mallard	1.7	p	6.2	—	—	—	3.0	5.7
Marsh Wren	10.0	5.0	11.5	—	—	1.0	6.0	8.0
Pied-billed Grebe	4.4	—	2.7	—	—	—	2.3	2.4
Red-winged Blackbird	37.2	160.0	33.8	60.0	50.0	25.0	43.4	49.1
Song Sparrow	—	—	0.8	—	—	p	0.3	5.1
Sora	0.6	—	0.4	—	—	—	0.3	1.1
Swamp Sparrow	13.3	35.0	12.3	—	—	22.0	14.4	11.1
Virginia Rail	6.7	—	7.7	—	—	4.0	5.6	3.5
Willow Flycatcher	—	—	3.8	—	—	3.0	2.0	0.5
Yellow Warbler	10.0	25.0	6.9	—	—	20.0	10.3	6.7
<i>Water Foragers</i>								
Black-crowned Night-Heron	p	—	1.9	—	—	—	0.8	0.4
Belted Kingfisher	—	—	0.4	—	—	1.0	0.3	0.5
Common Tern	1.7	5.0	p	—	—	—	0.8	0.9
Great Blue Heron	1.1	5.0	0.4	—	—	p	0.8	1.5
Green Heron	2.8	—	1.2	—	—	—	1.3	0.4
<i>Air Foragers</i>								
Bank Swallow	—	—	7.3	—	—	—	3.0	3.0
Barn Swallow	2.2	—	30.0	20.0	10.0	—	14.0	10.3
Cliff Swallow	—	—	0.4	—	—	—	0.2	0.2
Purple Martin	—	—	1.5	—	—	—	0.6	2.2
Tree Swallow	20.6	35.0	100.0	10.0	—	6.0	49.8	36.0

Table 5. Assessment of the status of indicator species abundance in the St. Lawrence River AOC in 1995 and 1996. "-" denotes values below the non-AOC average. "0" denotes values within the non-AOC average. "+" denotes values above the 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.

Marsh Name	Marsh Bird Indicator Species													Amphibian Indicator Species				
	AMBI	AMCO	BLTE	BWTE	COMO	COSN	LEBI	MAWR	MOOT	PBGR	SORA	VIRA	BULL	CHFR	NLFR	MIFR	SPPE	
Bainsville Marsh	0	+	0		0	p		0	+	0	0	+	0		0			
Coles Creek State Park								0					0					0
Cooper Marsh	p	0		+	0	+		+	+	0	0	+	+		0			0
Floral Drive Marsh																		
Glangary Bridges Marsh														0	0			0
Guindon Park Marsh																		
Loch Gary Marsh			p			0		0	0			0	0		0			0
Fly Creek Retention Pond														p		p		p
Summerstown Marsh																		0
St. Lawrence River Overall Assessment	-	0	0	0	0	0	+	+	+	0	-	+	+	-	0			0

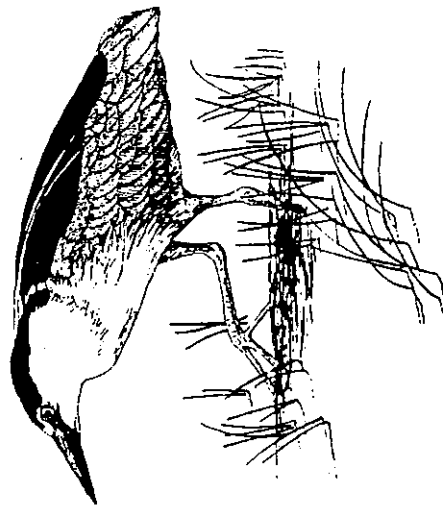


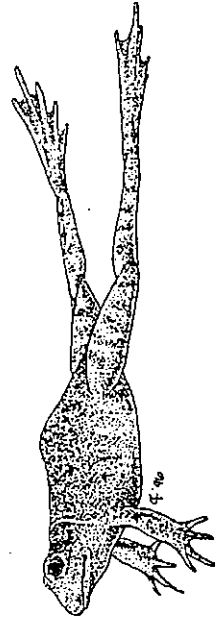
Table 6. Status of St. Lawrence River AOC Marshes in 1995 and 1996¹. "-" denotes values below the non-AOC average. "0" denotes values within the non-AOC average. "+" denotes values above the non-AOC average.

Marsh Name ²	Latitude/ Longitude	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	Amphibian Species Diversity	
Bainville Marsh C. P. Huge	45°10'45" 74°23'44"	Amph Bird	95/96 95/96	8 9	-	-	-	-	0	
Coles Creek State Park C. Tiny	44°50'90" 75°00'10"	Amph Bird	96 96	1 2	0	0	0	0	4	
Cooper Marsh C. P. Huge	45°07'00" 74°30'40"	Amph Bird	95/96 95/96	4 13	+	+	+	+	8	
Floral Drive Marsh N. P. Small	45°00'00" 74°40'00"	Bird	96	1	-	-	-	-	0	
Glengarry Bridges Marsh I. U. Medium	45°20'00" 74°48'00"	Amph	95/96	4	-	-	-	0	2	
Guendon Park Marsh N. P. Small	45°00'00" 74°40'00"	Bird	96	2	-	-	-	-	0	
Loch Gary Marsh I. P. Huge	45°16'11" 74°40'18"	Amph Bird	95 95/96	6 5	0	-	0	0	3	
Fly Creek Retention Pond N	45°02'20" 74°42'46"	Amph	96	1	-	-	-	+	2	
Summerstown Marsh N. U. Large	45°05'00" 75°30'00"	Amph	96	4	-	-	+	-	2	
St. Lawrence River Overall Assessment					0	0	0	0	3	

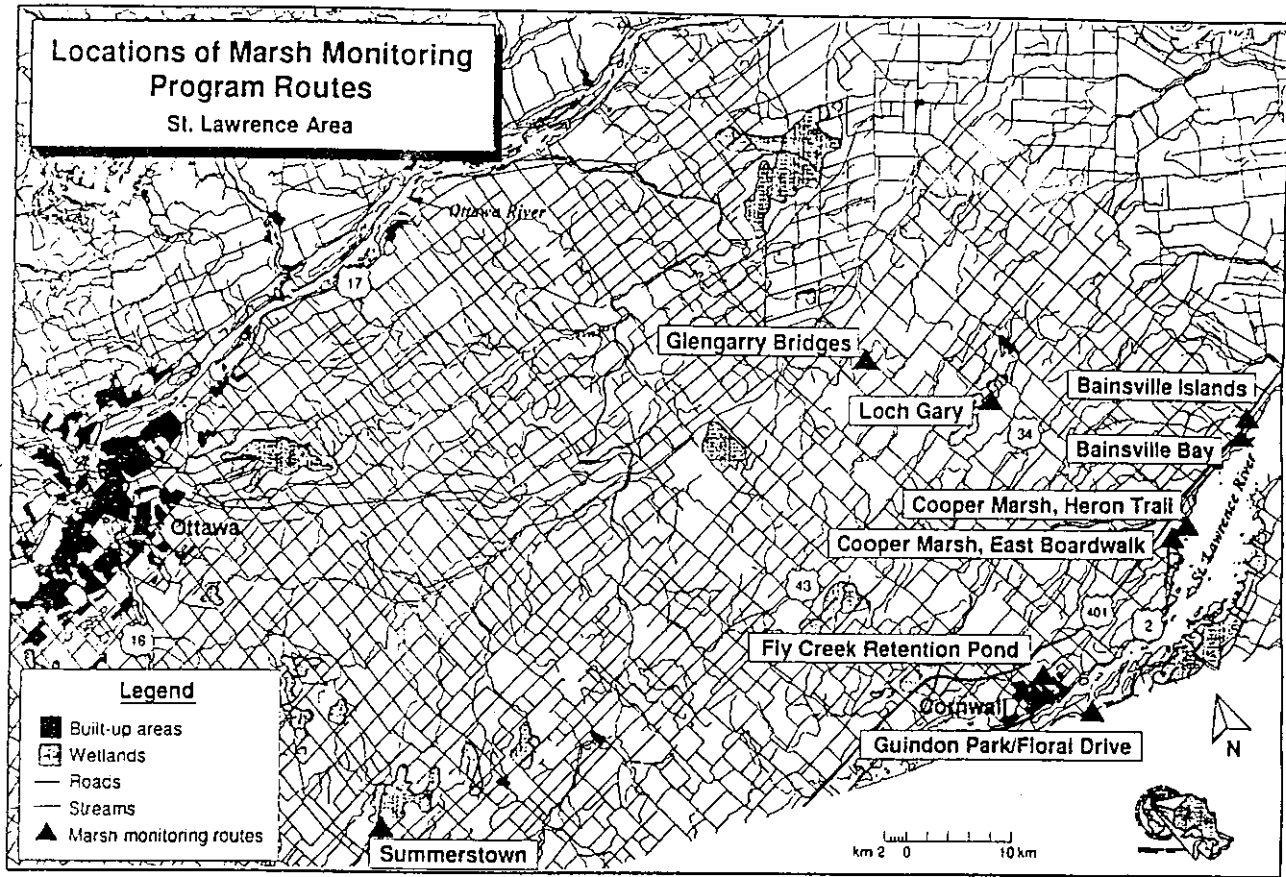
¹ See the Marsh Monitoring Program's 1997 Final Technical Report for a detailed description of the scoring system.

² R = rehabilitation site, C = coastal, N = nearshore, I = inland, P = provincially significant under the Ontario provincial wetlands evaluation system, U = unclassified under the Ontario provincial wetlands evaluation system. Tiny (2 - 2.5 ha), Medium (5 - 25 ha), Large (25 - 50 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.



Survey Locations



MMP Routes in the St. Lawrence River AOC. Bainsville Marshes (Bainsville Islands and Bainsville Bay), Cooper Marshes (Cooper Marsh Heron Trail, Cooper Marsh East Boardwalk), Guindon Park/Floral Drive, Glengarry Bridges, Loch Gary, Fly Creek Retention Pond and Summerstown. The route in Coles Creek State Park, New York is not shown.

Volunteer Efforts

Ten volunteers contributed over 240 person hours in 1995 and 1996 to the program. In addition, many volunteer hours on non-AOC routes were required to produce results which were used for comparison purposes. Our thanks go to the dedicated volunteers who conducted the St. Lawrence River surveys: John Anderson, Steve Anderson, Peggy Calder, Anke Craig, Rose-Marie Chretien, Christena Ferre, Brian Hickey, Naomi Langlois, Carmen Penty and John Stuart.

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