

2008 Marsh Bird and Anuran Species Occurrence and Abundance at Long Point Inner Bay Wetlands

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Introduction

This report summarizes the results of Marsh Monitoring Program (MMP) amphibian, bird and habitat surveys conducted at Long Point Bay-associated wetlands in 2008. This project constituted one component of a larger, three-year Ontario Ministry of Natural Resources Long Point Bay ecological assessment project, funded by the Canada-Ontario Agreement respecting the Great Lakes basin. These results are a preliminary assessment of Long Point Bay marsh bird and anuran community composition and species relative abundance. Associated habitat summaries provide context to help interpret biotic results.

Methods

Route selection and characteristics of MMP routes and stations

Upon registering with the MMP, volunteers received training kits that included detailed protocol instructions, field and summary data forms, instructional CDs with examples of songs and calls of common marsh birds and amphibians, and a CD used to elicit calls from secretive wetland bird species. Survey routes were established in marsh sites that are at least 1 ha in size. Each route consisted of one to eight monitoring stations depending on factors such as available time and marsh habitat size. Each marsh bird survey station was separated by at least 250 m to minimize duplicate counts of individuals. For amphibians, this distance was extended to 500 m because observers record all anurans heard both inside and beyond the 100 m station boundary (i.e., within hearing distance).

An MMP station was defined as a 100-m radius semi-circle with marsh habitat covering greater than 50% of the semi-circular area. Marsh habitat was defined as habitat regularly or periodically wet or flooded to a depth of up to two metres where cattail, bulrush, burreed and other non-woody vegetation predominated. Counts were conducted from a focal point at each station – the surveyor stood at the midpoint of the 200 m semi-circular base and faced the arc of the station perimeter. Each focal point was permanently marked with a stake and metal tag to facilitate relocation within and between years.

Bird Survey Protocol

Survey visits for birds were conducted twice between 20 May and 5 July, with at least 10 days occurring between visits. Visits began either between sunrise and no later than four hours after sunrise, or between four hours before sunset and the onset of darkness. Once a route was established as either a morning or evening route, it remained as such permanently. Bird surveys were conducted under appropriate survey conditions (i.e., warm, dry weather and little wind). The 15-minute survey consisted of a five-minute passive listening period, followed by a five-minute call broadcast period, and a final five-minute passive listening period. The broadcast CD contained calls of the normally secretive Least Bittern, Sora, Virginia Rail, Common Moorhen, American Coot and Pied-billed Grebe and was used to elicit call responses from those species.

During the count period, observations (seen or heard) of species listed among a defined list of “focal” (marsh obligate indicator) species were recorded on the survey form in one-minute intervals during the first ten minutes of the survey. Focal species individuals were tracked separately, and were observed within the semi-circular sample area at unlimited distance. All other observed bird species were recorded onto a survey station map if they occurred within 100-m semi-circular station boundary. Aerial foragers were also counted and were defined as those species foraging within the station area to a height of 100 m. Non-focal bird species flying through or detected outside the station were tallied separately.

Amphibian Survey Protocol

Amphibians surveyed by MMP volunteer participants were calling frogs and toads that typically depend on marsh habitat during spring and summer breeding periods. MMP routes were surveyed for calling amphibians during three separate nights each year, between the beginning of April and the end of July, with at least 15 days occurring between visits. Because peak amphibian calling periods are more strongly associated with temperature and precipitation than with date, visits were scheduled to occur during three separate evenings according to minimum night air temperatures of 5°C (41°F), 10°C (50°F), and 17°C (63°F), respectively.

Amphibian surveys began one-half hour after sunset and ended before or at midnight. Visits were conducted during evenings with little wind, preferably in moist conditions with one of the above corresponding temperatures. During three-minute survey visits, observers assigned a Call Level Code to each species detected; for two of these levels, estimated numbers of individuals were also recorded. Call Level Code 1 was assigned if calls did not overlap and calling individuals could be discretely counted. Call Level Code 2 was assigned if calls of individuals sometimes overlapped, but numbers of individuals could still reasonably be estimated. Call Level Code 3 was assigned if so many individuals of a species were calling that overlap among calls seemed continuous (i.e., full chorus); a count estimate is impossible for Call Level Code 3 and thus is not required by the protocol.

MMP participants were asked to use their best judgment to distinguish whether each species detected was calling from inside the station boundary only, from outside the station boundary only, or from both inside and outside the station boundary.

Monitoring Coverage

A total of 15 MMP monitoring routes were monitored in marshes along Long Point Bay and the surrounding Long Point area in 2008 (see Figures 1 to 5) . Nine routes were monitored for both birds and amphibians, while three were monitored for birds only and three were monitored for amphibians only (Table 1). These routes were collectively monitored by MMP volunteer participants, Bird Studies Canada staff, and temporary contract staff (Table 1).

To summarize data, stations were grouped within pre-designated Long Point marsh complex categories (Table 2). This allowed for comparison at the marsh

complex scale. Table 2 lists these marsh complexes and the number of bird and amphibian stations within each.

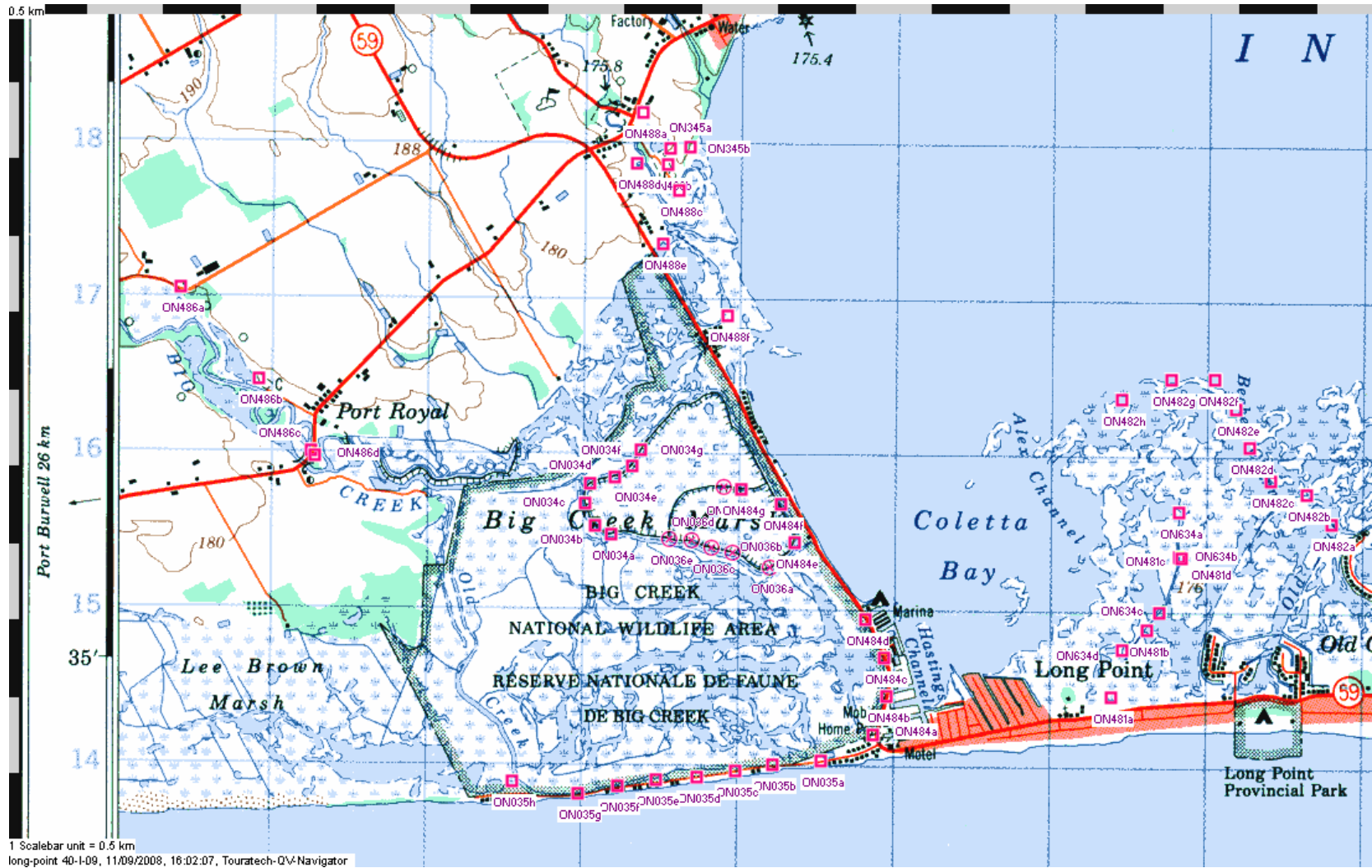


Figure 1. 2008 MMP station locations within the Big Creek National Wildlife Area (managed and unmanaged), lower Big Creek, Bird Studies Canada pond and Inner Bay property sites, and western Crown Marsh.



Figure 2. 2008 MMP station locations within Crown Marsh, Long Point Provincial Park, and the Long Point National Wildlife Area – Thoroughfare Unit. Collectively, these sites constituted the Long Point Inner Bay South Shore marsh complex.

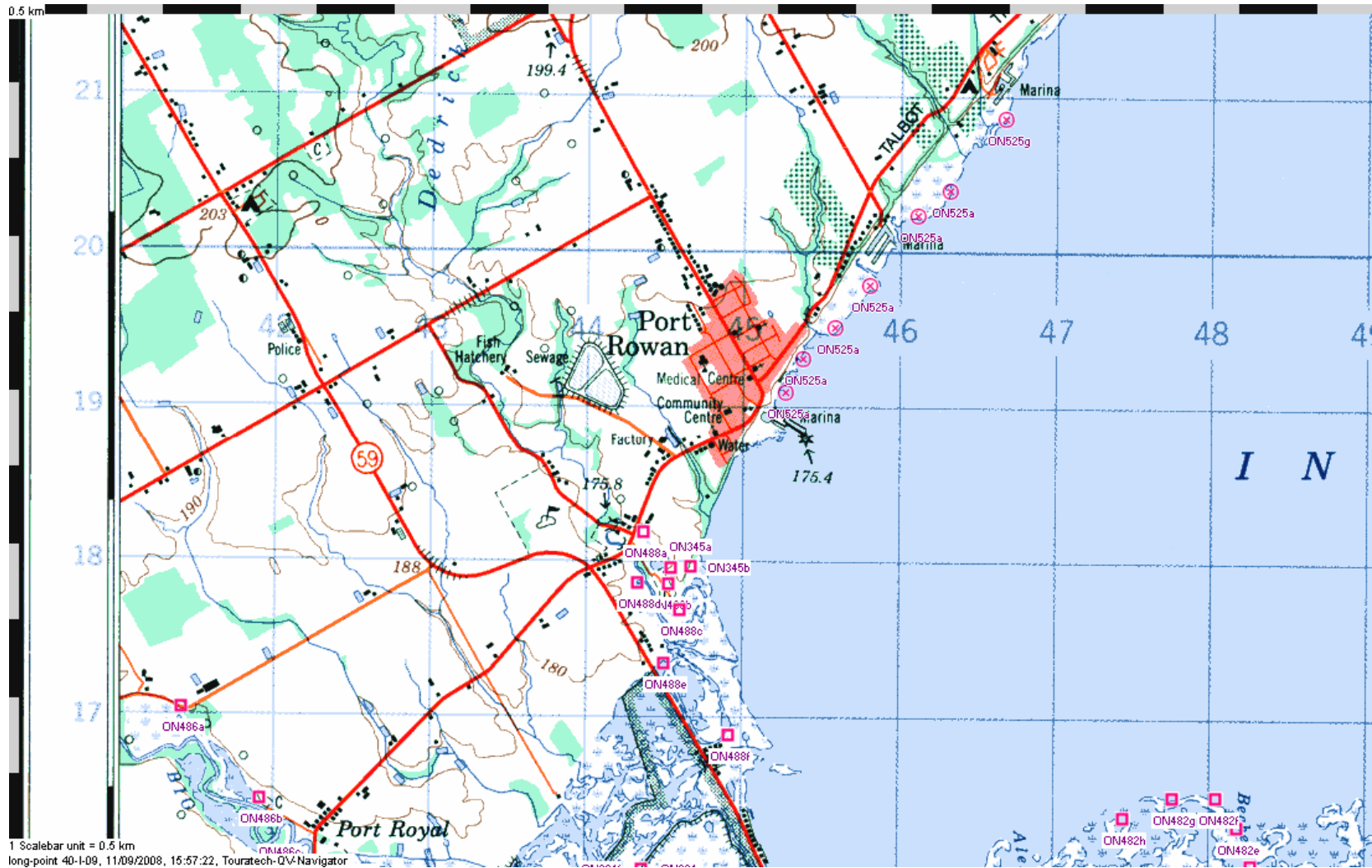


Figure 3. 2008 MMP station locations within the Bird Studies Canada pond and Inner Bay property sites and the Long Point Inner Bay North Shore marshes.

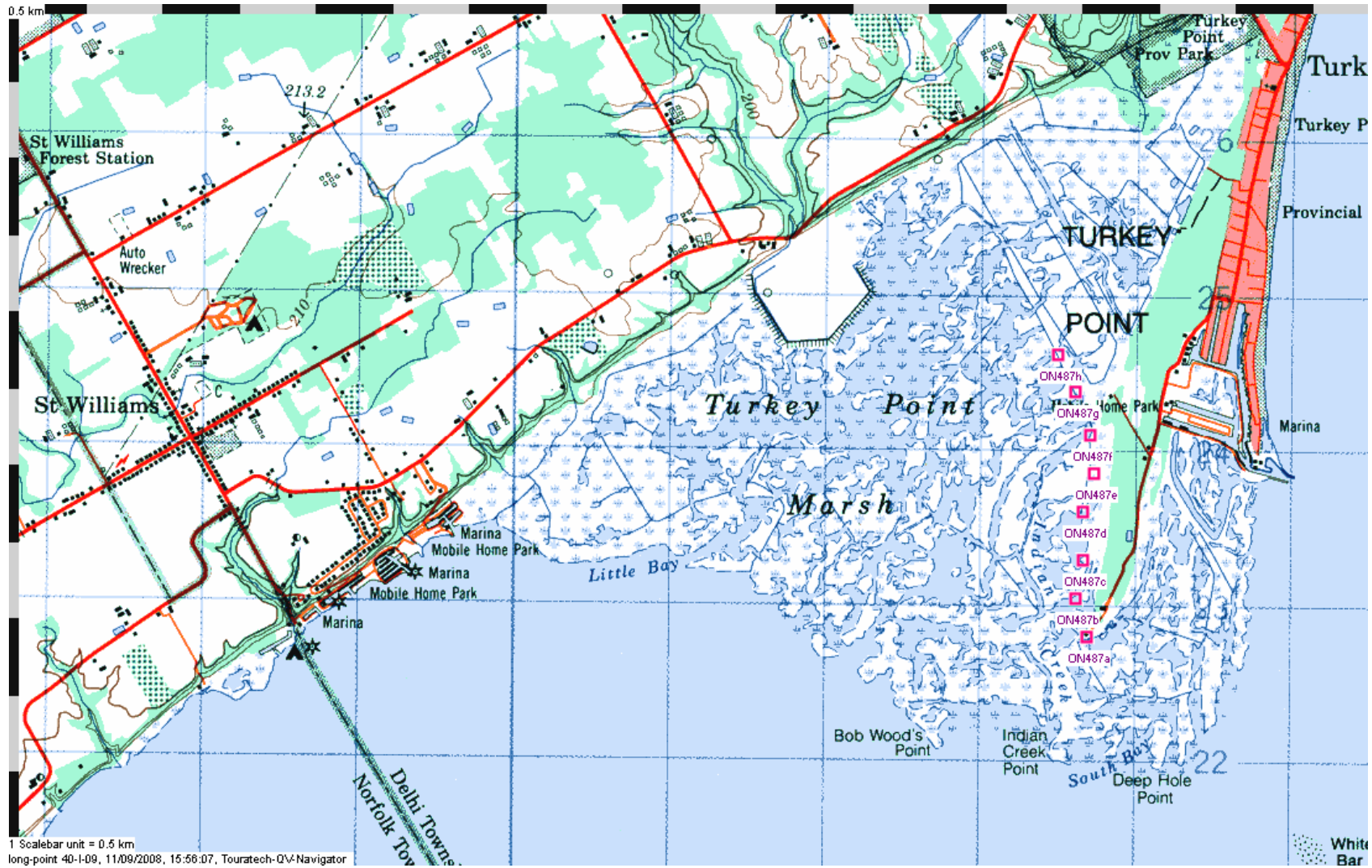


Figure 4. 2008 MMP station locations within the Turkey Point marsh.

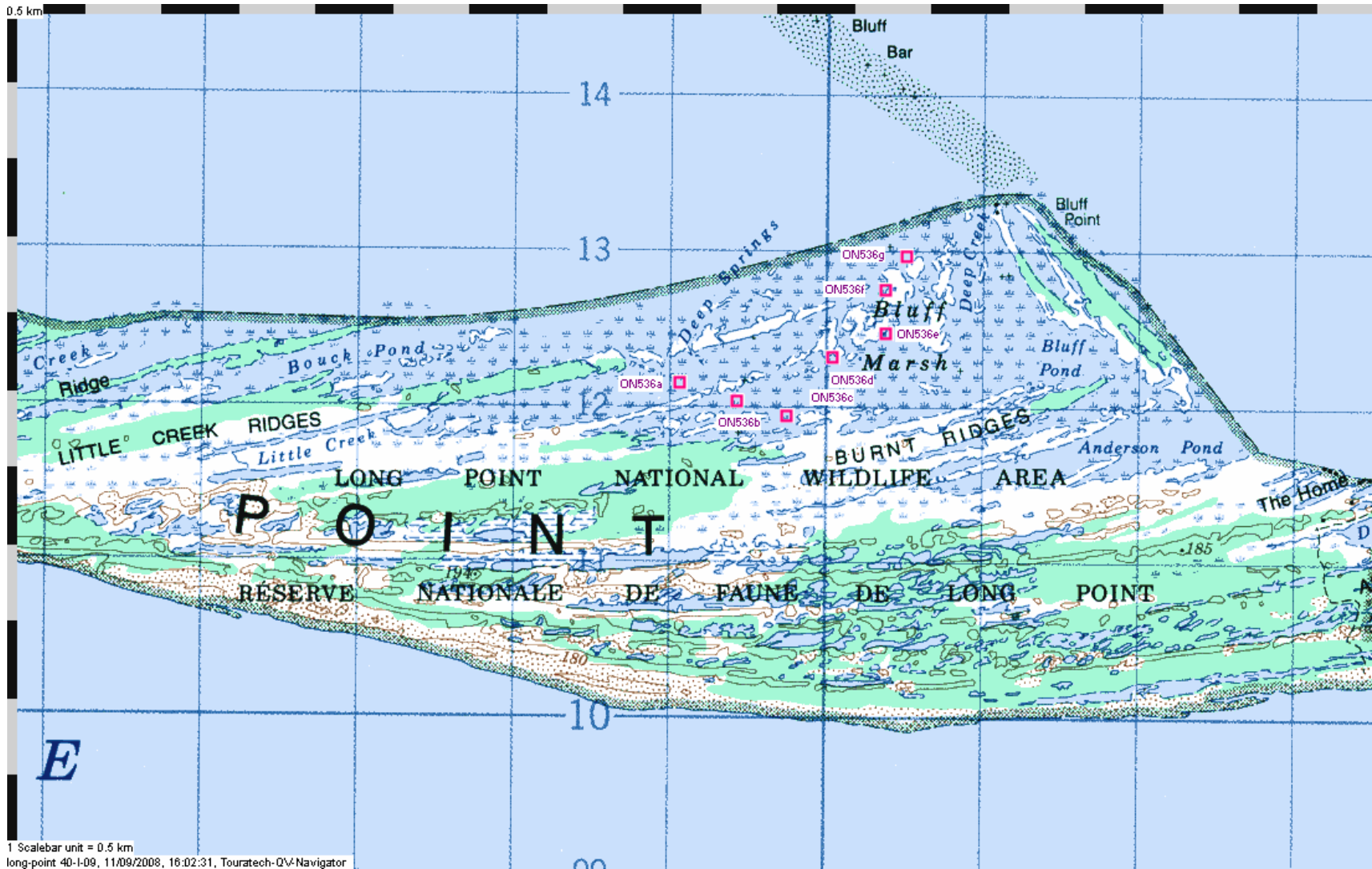


Figure 5. 2008 MMP station locations within the Long Point National Wildlife Area – Breakwater, Squires, Bluff marsh complex.

Table 1. Route name, type of survey and surveyor type for Long Point-area MMP routes monitored in 2008. Wetland complex code within which each route/station occurred is provided.

Route ID	Route Name	Survey Type	Surveyor	Wetland Complex Code
ON034	Big Creek NWA North	Amphibians/Birds	BSC staff in-kind	ON034 - Stations A,C,G,H ON512 - Stations B,D,E,F
ON035	Big Creek Hastings Drive	Amphibians/Birds	Volunteer	ON512
ON036	Big Creek NWA South	Amphibians/Birds	BSC staff in-kind	ON034 - Stations A,B,C,D,F ON512 - Station E
ON345	BSC Starling Property Pond and Inner Bay	Birds	Volunteer	ON345a - Station A ON345b - Station B
ON481	Crown Marsh Dyke Amphibians	Amphibians	BSC staff in-kind	ON039
ON482	Old Cut - Crown Marsh	Amphibians/Birds	Contractor	ON039
ON483	Long Point Provincial Park	Amphibians/Birds	Contractor	ON039
ON484	Big Creek NWA - Causeway	Amphibians/Birds	Contractor	ON512 - Stations A,B,C,D ON034 - Stations E,F,G
ON485	Long Point NWA	Amphibians/Birds	Contractor	ON039
ON486	Port Royal Marsh	Amphibians/Birds	Contractor	ON512
ON487	Turkey Point Marsh	Birds	Contractor	ON266
ON488	North Causeway and BSC HQ	Amphibians	BSC staff in-kind	ON345b - Stations A,B,D,E,F ON345a - Station C
ON525	Port Rowan	Amphibians/Birds	Contractor	ON525
ON536	Bluff Bar	Amphibians	Volunteer	ON037
ON634	Crown Marsh Dyke Birds	Birds	Contractor	ON039

Table 2. Marsh name, marsh code and number of MMP amphibian and bird stations within each Long Point marsh habitat complex.

Marsh Code	Marsh Name	Amphibian Stations	Bird Stations
ON034	Big Creek NWA - Managed Cells	8	10
ON037	Long Point NWA - Breakwater, Squires, Bluff	7	0
ON039	Long Point Bay South Shore Marshes - Crown Marsh, Coletta Bay, Provincial Park, Rice Bay, Thoroughfare	17	25
ON266	Turkey Point Marsh	0	8
ON345a	BSC Starling Property Pond	2	1
ON345b	BSC Starling Property Inner Bay	4	2
	Big Creek NWA - Unmanaged; Hahn Unit, Lee		
ON512	Brown Marsh, Lower Big Creek	13	17
ON525	Long Point Bay North Shore Marshes	3	7

Monitoring Timeline

Table 3 lists the bird and/or amphibian survey visit date, and survey periods monitored, for each route.

Table 3. Bird and/or amphibian survey periods during which monitoring occurred and associated visit date, for each route.

Route ID	Survey	Survey Period	Visit Date	Route ID	Survey	Survey Period	Visit Date
ON034	Amphibians	1	April 18	ON484	Amphibians	1	April 25
		2	May 13			2	May 22
		3	June 4			3	June 18
	Birds	1	June 4		Birds	1	June 25
		2	July 9			2	July 17
ON035	Amphibians	1	April 11	ON485	Amphibians	2	June 1
		2	May 15			3	June 19
	Birds	1	June 7		Birds	1	June 24
		2	July 5			2	July 7
ON036	Amphibians	1	April 14	ON486	Amphibians	2	May 24
		2	May 13			3	June 18
		3	June 15			Birds	1
	Birds	1	June 18		2		July 13
			2		July 3	ON487	Birds
ON345	Birds	1	June 7			2	July 5
		2	June 22	ON488	Amphibians	1	April 18
ON481	Amphibians	1	April 17	2		May 24	
		2	May 24	3		June 11	
		3	June 19	ON525	Amphibians	2	May 15
ON482	Amphibians	3	June 27	3		June 29	
		Birds	1	June 27	Birds	1	June 29
	2		July 15	2		July 16	
ON483	Amphibians	2	May 23	ON536	Amphibians	3	June 5
		3	June 14	ON634	Birds	1	June 15
	Birds	1	June 14	2		June 25	
		2	July 6				

Results

Table 4. Occurrence of amphibian species within the Long Point wetlands during each of the three survey periods.

Species	Species Code	Occurrence		
		Visit 1	Visit 2	Visit 3
American Toad	AMTO	✓	✓	
Bullfrog	BULL		✓	✓
Chorus Frog	CHFR	✓	✓	
Fowler's Toad	FOTO		✓	
Gray (Tetraploid) Treefrog	GRTR		✓	✓
Green Frog	GRFR		✓	✓
Northern Leopard Frog	NLFR	✓	✓	
Spring Peeper	SPPE	✓	✓	
Wood Frog	WOFR	✓		

Table 5. Maximum calling code that was detected during each survey visit for each species, divided by marsh complex. Number of stations surveyed within each marsh complex per survey visit is provided.

Marsh Complex	Visit Number	Maximum Calling Code									Number of Stations Surveyed
		American Toad	Bullfrog	Chorus Frog	Fowler's Toad	Green Frog	Gray (Tetraploid) Treefrog	Northern Leopard Frog	Spring Peeper	Wood Frog	
Big Creek NWA - Managed Cells	1	1		1				3	3	2	8
	2	3	1			1		1	3		8
	3		2			3					7
Long Point NWA - Breakwater, Squires, Bluff	3		3			2	3				7
Long Point Bay South Shore Marshes	1	1						3			4
	2	3	1	1	1	2		2			14
	3		1			3	2				17
BSC Starling Property Pond	1	1						1	3		2
	2										2
	3		1			2					2
BSC Starling Property Inner Bay	1	3						2	3		4
	2	1				1		1	1		4
	3		1			2					4
Big Creek NWA - Unmanaged; Hahn Unit, Lee Brown Marsh, Lower Big Creek	1	2		1					3		11
	2	3	1			1	1	1	2		15
	3		1			2					10
Long Point Bay North Shore Marshes	2	3		1		1		1			3
	3		3			1					3

Table 6. Maximum calling code for each species across all marsh complexes, number of stations at which each species was detected, and each species' percentage occurrence among all monitored stations.

Species Name	Maximum Calling Code	Number of Stations with Species Detected	Percent Occurrence Among All Stations
American Toad	3	27	47
Bullfrog	3	32	56
Chorus Frog	1	13	23
Fowler's Toad	1	1	2
Gray (Tetraploid) Treefrog	3	3	5
Green Frog	3	35	61
Northern Leopard Frog	3	24	42
Spring Peeper	3	19	33
Wood Frog	2	3	5
No anurans recorded	-	5	9

Table 7. Stations that had no amphibians detected during the 2008 monitoring season.

Route ID	Station
ON483	D
ON483	E
ON483	F
ON485	C
ON485	G

Table 8. Occurrence of wetland bird species in Long Point wetlands during the two survey periods.

Species	Species Code	Occurrence		Species	Species Code	Occurrence	
		Visit 1	Visit 2			Visit 1	Visit 2
Alder Flycatcher	ALFL	✓	✓	Green Heron	GRHE	✓	✓
American Bittern	AMBI	✓	✓	Hairy Woodpecker	HAWO		✓
American Coot	AMCO	✓	✓	Herring Gull	HERG		✓
American Crow	AMCR	✓		Hooded Merganser	HOME		✓
American Goldfinch	AMGO	✓	✓	House Sparrow	HOSP	✓	✓
American Robin	AMRO	✓	✓	House Wren	HOWR	✓	✓
Bald Eagle	BAEA	✓	✓	Indigo Bunting	INBU		✓
Baltimore Oriole	BAOR	✓	✓	Killdeer	KILL	✓	✓
Bank Swallow	BANS	✓	✓	Least Bittern	LEBI	✓	✓
Barn Swallow	BARS	✓	✓	Mallard	MALL	✓	✓
Belted Kingfisher	BEKI	✓	✓	Marsh Wren	MAWR	✓	✓
Black Tern	BLTE	✓	✓	Mourning Dove	MODO	✓	✓
Black-capped Chickadee	BCCH	✓		Northern Cardinal	NOCA	✓	✓
Black-crowned Night-Heron	BCNH	✓		Northern Flicker	NOFL		✓
Blue-winged Teal	BWTE		✓	Northern Pintail	NOPI	✓	
Brown Thrasher	BRTH		✓	Northern Rough-winged Swallow	NRWS	✓	✓
Carolina Wren	CARW	✓		Pied-billed Grebe	PBGR	✓	✓
Caspian Tern	CATE	✓	✓	Purple Martin	PUMA	✓	✓
Cedar Waxwing	CEDW		✓	Red-winged Blackbird	RWBL	✓	✓
Common Grackle	COGR	✓	✓	Ring-billed Gull	RBGU	✓	✓
Common Moorhen	COMO	✓	✓	Sandhill Crane	SACR	✓	✓
Common Tern	COTE	✓	✓	Savannah Sparrow	SAVS	✓	
Common Yellowthroat	COYE	✓	✓	Sedge Wren	SEWR	✓	
Double-crested Cormorant	DCCO	✓		Song Sparrow	SOSP	✓	✓
Downy Woodpecker	DOWO	✓		Sora	SORA		
Eastern Kingbird	EAKI	✓	✓	Swamp Sparrow	SWSP	✓	✓
Eastern Phoebe	EAPH	✓		Tree Swallow	TRES	✓	✓
European Starling	EUST	✓		Virginia Rail	VIRA	✓	✓
Field Sparrow	FISP	✓		Warbling Vireo	WAVI	✓	✓
Forster's Tern	FOTE	✓	✓	Willow Flycatcher	WIFL	✓	✓
Gray Catbird	GRCA	✓	✓	Wilson's Snipe	WISN	✓	
Great Blue Heron	GBHE	✓	✓	Wood Duck	WODU	✓	✓
Great Crested Flycatcher	GCFL	✓		Yellow Warbler	YWAR	✓	✓

Table 9. Maximum abundance per 10 stations for bird species detected during each survey visit, for each marsh complex. Number of stations surveyed within each marsh complex per survey visit is provided. Indicator species are identified by bold and italicized font.

Species Name	Marsh Complex													
	Big Creek NWA - Managed Cells		Long Point Bay South Shore Marshes		Turkey Point Marsh		BSC Starling Property Pond		BSC Starling Property Inner Bay	Big Creek NWA - Unmanaged; Hahn Unit, Lee Brown Marsh, Lower Big Creek		Long Point Bay North Shore Marshes		
	1	2	1	2	1	2	1	2	2	1	2	1	2	
Alder Flycatcher										0.5	1.0			
<i>American Bittern</i>	2.0	1.0	2.4	1.7	2.5	1.3				0.5	0.5			
<i>American Coot</i>			0.4	0.4										
American Crow										p				
American Goldfinch		p	p	p		2.5				0.5	0.5			
American Robin			p	p		p	1.0		p	2.4	1.0	p	1.4	
Bald Eagle	p					p								
Bank Swallow	1.0	3.0									2.9			
Baltimore Oriole										1.0	p			
Barn Swallow	21.0	58.0	10.0	3.1	11.3	126.3		3.0	20.0	35.7	85.2	72.9	352.9	
Black-billed Cuckoo				0.4							1.0			
Black-capped Chickadee										1.9				
Black-crowned Night-Heron			p											
Belted Kingfisher			p		1.3						1.0	p	p	
<i>Black Tern</i>	5.0	2.0	2.8	p	23.8	17.5				2.9	0.5			
Brown Thrasher				0.8										
Blue-winged Teal											0.5			
Carolina Wren										0.5				
Caspian Tern		2.0			p									
Cedar Waxwing		p									p			
Common Grackle	p	p	2.8	p	2.5	p			10.0	5.7	1.0	p	2.9	
<i>Common Moorhen</i>			2.0	1.7									7.1	
Common Tern		p	p	p							p		p	
Common Yellowthroat	9.0	19.0	14.8	15.0	23.8	26.3		1.0		17.6	26.7	25.7	34.3	
Double-crested Cormorant										2.4				
Downy Woodpecker										p				
Eastern Kingbird		1.0	4.4	0.8	5.0	7.5		1.0		2.9	4.8			
Eastern Phoebe							1.0							
European Starling			p		1.3		1.0			p				
Field Sparrow			0.8											
Forster's Tern	p		p							0.5	p			
Great Blue Heron	p	1.0	p		1.3	1.3				p		1.4	p	
Great Crested Flycatcher					1.3							1.4		

Table 9 (continued).

Species Name	Marsh Complex												
	Big Creek NWA - Managed Cells		Long Point Bay South Shore Marshes		Turkey Point Marsh		BSC Starling Property Pond		BSC Starling Property Inner Bay	Big Creek NWA - Unmanaged; Hahn Unit, Lee Brown Marsh, Lower Big Creek		Long Point Bay North Shore Marshes	
	1	2	1	2	1	2	1	2	2	1	2	1	2
Gray Catbird			4.0	4.2						1.4	1.0		1.4
Green Heron		p					2.0		10.0	p	1.0		
Hairy Woodpecker				0.4									
Herring Gull				p				p	p				
Hooded Merganser								1.0					
House Sparrow							2.0			p			
House Wren				1.7						1.0	1.0		2.9
Indigo Bunting		p											
Killdeer		p	p	p			2.0	1.0					
Least Bittern	3.0	2.0	1.6	1.3					10.0				
Mallard	p			0.8						p			
Marsh Wren	37.0	34.0	102.8	33.8	11.3	17.5		3.0		7.1	11.4	47.1	31.4
Mourning Dove	p	p	1.2	p	p	p			p	1.4	p	p	
Northern Cardinal			0.4		1.3	1.3					1.0	2.9	2.9
Northern Flicker				0.4							p		
Northern Pintail							1.0						
Northern Rough-winged Swallow			450.0	187.8									
Pied-billed Grebe	2.0		2.8	2.9			1.0	1.0		0.5		11.4	22.9
Purple Martin	30.0	22.0	50.0	2.9		8.0			10.0	12.9	8.1	21.4	
Ring-billed Gull		p	p	p						p	p		p
Red-winged Blackbird	43.0	31.0	44.0	45.0	33.8	33.8	6.0	2.0	50.0	51.0	40.5	45.7	38.6
Sandhill Crane	1.0									2.4	p		
Savannah Sparrow										0.5			
Sedge Wren					11.3								
Song Sparrow	7.0	9.0	8.4	7.1	1.3					8.6	6.7	4.3	14.3
Swamp Sparrow	12.9	13.0	9.2	13.3	16.3	17.5				5.2	15.2	5.7	5.7
Tree Swallow	38.0	125.0	9.2	33.3	41.3	57.5	10.0	5.0	10.0	144.8	62.2	24.3	118.6
Virginia Rail	1.0	5.7		0.4	3.8	1.3							
Warbling Vireo										1.4	0.5		
Willow Flycatcher			2.0	0.4					30.0				
Wilson's Snipe										1.0			
Wood Duck	2.0	p	2.8	p	8.0	8.8	10.0	4.0	p	p	p	1.4	
Yellow Warbler			6.8	7.1	2.5	2.5			30.0	7.1	4.3	8.6	1.4
Number of stations surveyed	10	10	25	24	8	8	1	1	1	21	21	7	7

Table 10. Percent cover of habitat and emergent vegetation composition for each Long Point marsh complex monitored in 2008.

Habitat Characteristic	Marsh Complex						
	Big Creek NWA - Managed Cells	Long Point Bay South Shore Marshes	Turkey Point Marsh	BSC Starling Property Pond	BSC Starling Property Inner Bay	Big Creek NWA - Unmanaged; Hahn Unit, Lee Brown Marsh, Lower Big Creek	Long Point Bay North Shore Marshes
Habitat Composition (Percent Cover)							
Emergent Vegetation	87	79	69	45	57	68	81
Open Water	12	10	29	35	17	20	14
Exposed Mud, Sand, Rock	0	0	0	3	1	0	0
Trees	0	2	1	4	9	7	5
Shrubs	1	9	2	13	16	6	0
Emergent Vegetation Composition (Percent Cover)							
Cattail (<i>Typha</i>)	58	34	69	86	50	62	60
Reeds (<i>Phragmites</i> , <i>Phalaris</i>)	1	31	9	1	9	7	4
Grasses and Sedges	8	13	11	1	6	7	5
Rushes and Bulrushes (<i>Juncus</i> , <i>Scirpus</i>)	0	2	6	0	5	2	3
Water Willow (<i>Decodon</i>)	16	1	1	0	0	0	0
Pickerelweed (<i>Pontederia</i>)	0	0	0	0	5	2	4
Arrowhead (<i>Sagittaria</i>)	0	0	4	0	0	0	14
Smartweed (<i>Polygonum</i>)	0	0	0	0	0	0	2
Burreed (<i>Sparganium</i>)	0	2	1	0	0	0	1
Other	17	18	0	12	25	21	8
Number of Stations	5	29	8	3	5	12	7

Discussion

All anuran species expected to occur within the Long Point area were detected on MMP routes in 2008. This included the Wood Frog, a species often missed by anuran surveys due to its brief, explosive breeding period, and the federally and provincially threatened Fowler's Toad. Four Fowler's Toad individuals were detected at Station A of the Crown Marsh Dyke route, a shoreline location characterized by sandy substrate.

Across marsh complexes, all other species were detected at a maximum calling code of 3, which may suggest the relative health of these marshes, at least at this broad scale. However, when viewing marsh complexes individually, differences appear. Most species detected within the Big Creek NWA managed cells achieved a maximum calling code of 3. By contrast, most species that occurred within the unmanaged Big Creek NWA and lower Big Creek complex only achieved a maximum calling code of 1. Additionally, relatively lower calling intensities were detected among species found at the BSC pond and Inner Bay property sites, and the north shore marshes, likely a result of their relatively small size and lack of physical and vegetative diversity. Also of note was the relative scarcity of Chorus Frogs throughout Long Point marshes. This last point is especially pertinent given long-term MMP trends which suggest a steep decline in the population of Chorus Frogs.

A diverse array of bird species were detected at Long Point wetlands in 2008. Among designated indicator species, American Coot, American Bittern, Black Tern, Common Moorhen, Least Bittern, Marsh Wren, Pied-billed Grebe, Swamp Sparrow, and Virginia Rail were all detected in at least one marsh complex. However, Sora was not detected at any station during 2008. In fact, examination of historical MMP data has determined that Sora has never been observed at Long Point MMP routes.

The indicator species differed in their distribution among the monitored marsh complexes. As expected, most species tended to occur within the larger, more diverse marsh habitats, such as the south shore marshes, Big Creek National Wildlife Area, and Turkey Point. Conversely, fewer indicator species were detected within the smaller, fringing and more fragmented habitats of the north shore marshes and BSC pond and Inner Bay properties. Due to their small size and fringing nature, these habitats may be more susceptible to surrounding disturbances and other stressors.

These results present a preliminary assessment of the state of bird and amphibian communities in Long Point Bay wetlands. However, additional years of data will be required to more confidently assess the integrity of these communities, and by extension, the health of Long Point Bay wetland habitats.