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Inside This Issue:


Common Tern; by Frank Horvath

Monitoring the Recovery of Wetlands in Great Lakes Areas of Concern

Urban and industrial development around the Great Lakes basin demonstrates the immense resource that the lakes represent for the region. However, urban development, intensive farming practices and some land use planning decisions have resulted in a legacy of polluted natural environments. Aquatic systems (e.g., streams, rivers, lakes, wetlands) have been particularly impacted from inputs of toxic chemicals, such as from industrial discharges and contaminated runoff from agricultural fields and roadways. Human activities have also resulted in loss of riparian and wetland habitat, increased erosion and sedimentation in waterways, and introduction of exotic invasive species. These watershed-scale impacts ultimately affect the Great Lakes, a finite freshwater resource depended upon by millions. During the 1980s, 43 localized areas of the Great Lakes basin were identified as having severely degraded environments caused by local pollution sources; these are known as Great Lakes Areas of Concern (AOCs).

Wetlands are an important functional component of aquatic systems -- they filter sediments and contaminants from water, provide habitat for a wide array of species, cycle nutrients and regulate water flow. Serving as a bridge between terrestrial and aquatic systems, the abundance and proper functioning of wetlands is indicative of the ecological health of a surrounding watershed. Loss and degradation of wetlands, and their resident wildlife, is a common problem among many AOCs.

Areas of Concern were identified as a means to focus remediation efforts and restore these natural environments. Progress has been made, although much work remains to be done. One way of tracking AOC recovery is through monitoring the health of wetlands, and in particular, their marsh bird and amphibian communities. The Marsh Monitoring Program (MMP) has been involved in AOC monitoring since 1995. Many of these wetlands are in poor health, but even though they might not currently harbour much biodiversity, it is important to annually monitor their recovery. We have witnessed success stories where wetland restoration efforts have resulted in increased species abundance and diversity over time, such as at Wye Marsh on Georgian Bay and Cootes Paradise in western Lake Ontario. It is also important to survey less-disturbed “reference” sites, which can serve as a benchmark for AOC sites. These data are reported to AOC remedial action committees, which use them to assess progress to meet habitat and population restoration goals, and ultimately, to de-list the AOC.

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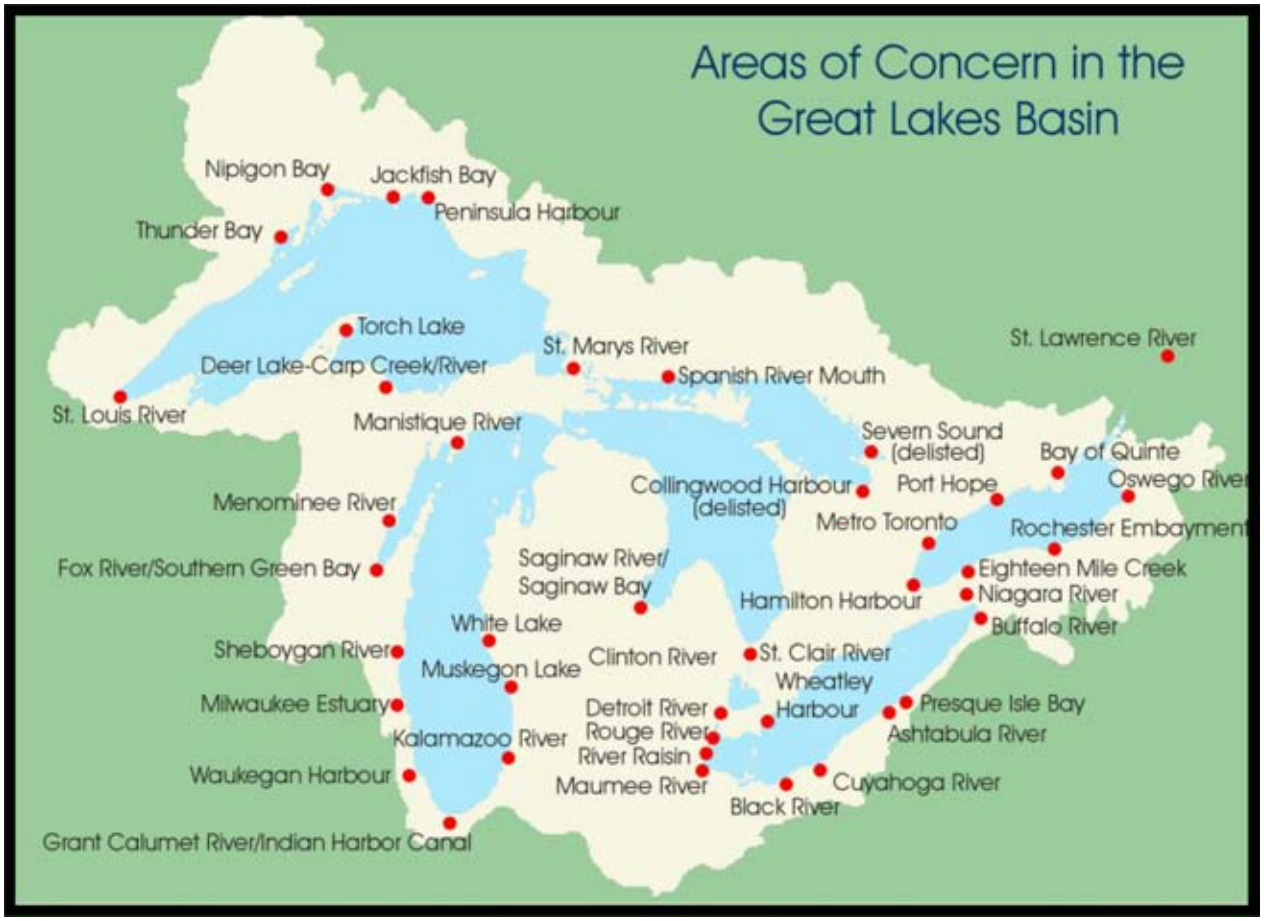
Several special MMP projects have contributed to AOC reporting. The most ambitious of these was to incorporate volunteer-collected MMP data with program staff-based wetland water chemistry and aquatic macroinvertebrate sampling. Doing so provided a more robust approach to assess wetland quality. Eleven AOCs were evaluated based on their ability to support marsh bird and amphibian communities relative to Great Lakes basin-wide averages. Most of these sites were also ranked according to their macroinvertebrate, marsh bird and amphibian community integrity, which highlight sites that may be in need of restoration efforts.

More recently, 25 volunteer MMP regional coordinators have been recruited to maintain and enhance marsh monitoring. These dedicated individuals promote the MMP within their local area, and recruit, train, and assist local volunteers. Coordinators help ensure that long-term MMP monitoring continues in AOC regions.

Bird Studies Canada (BSC) is currently working on a project to monitor and assess wetlands in the Buffalo River and Niagara River (US and Canada) AOCs. With help from the Niagara Peninsula Conservation Authority, Buffalo Niagara Riverkeeper and area regional coordinators, we are looking for new volunteers to monitor Buffalo and Niagara region wetlands. Data collected from these sites will improve our ability to report on restoration efforts.

The push for AOC restoration and delisting has never been stronger. Volunteer wetland monitoring in these areas is crucial in our role to track the recovery of these important ecosystems.

by Ryan Archer, Aquatic Survey Programs Coordinator



Your Data at Work

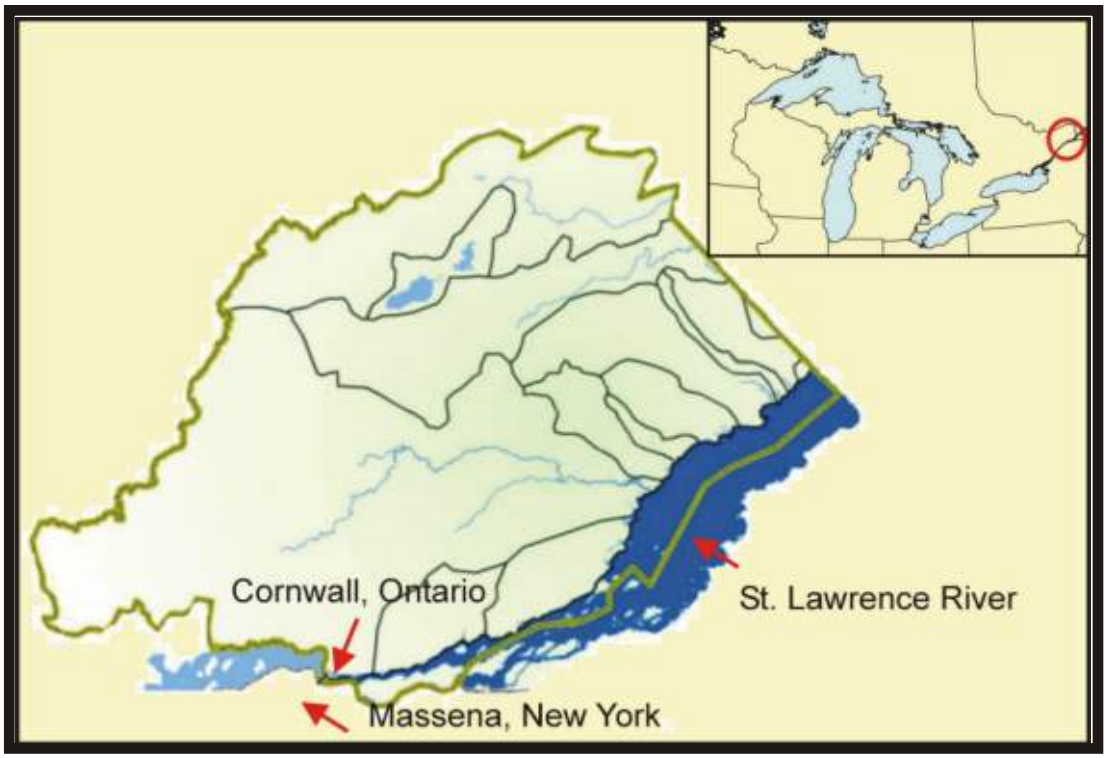
The St. Lawrence River Area of Concern: Moving Towards Delisting

Marsh Monitoring Program data has been collected at the St. Lawrence River (Cornwall) Area of Concern since 1995. Here Katherine Beehler, St. Lawrence River (Cornwal) Remedial Action Plan Coordinator, tells us more about the AOC, what the MMP data have shown and some of their plans for the future.

Spotted Joe Pye-Weed; by Sandra Horvath

The St. Lawrence River (Cornwall) Remedial Action Plan (RAP) was initiated in 1986 and includes an 80-km stretch of the river that extends from the Moses-Saunders Dam downstream to the outlet of Lake St. Francis at the Beauharnois Dam in Quebec. Recognized as one of seventeen Canadian AOCs, and one of five bi-national AOCs along the Great Lakes, the St. Lawrence River (Cornwall) RAP identified seven major environmental issues that required remediation. These included constraints on water recreation and beach access due to elevated bacteria levels; declining fish and wildlife populations; loss of fish and wildlife habitat; fish and wildlife consumption restrictions due to contaminants; excessive algae; contaminated sediments; and degraded benthic invertebrate communities.

To address these environmental issues, various research and monitoring plans were implemented throughout the AOC. The MMP was launched within the St. Lawrence River AOC in 1994. The species diversity data collected by local MMP volunteers provides valuable information about the overall health of regional wildlife populations and wetland habitat. These baseline data are also used to track



St. Lawrence River Area of Concern and associatedwatersheds; courtesy of St. Lawrence River (Cornwall) Remedial Action Plan

Lissa Deslandes and Basil conducting frog surveys at Charlottenburgh Park; by Katherine Beehler

improvements in marsh bird and amphibian populations and their habitats, particularly after restoration and rehabilitation efforts have been implemented.

MMP data show an improvement in AOC status in terms of amphibian and marsh bird species diversity, from "impaired" for the period 1995-2002 to "no apparent impairment" for the period 2003-2008.

Since 1995 the number of participants and marshes surveyed have increased throughout the AOC. MMP data show an improvement in AOC status in terms of amphibian and marsh bird species diversity, from "impaired" for the period 1995-2002 to "no apparent impairment" for the period 2003-2008. These types of successes contribute to the overall environmental achievements that have been garnered through the RAP process and assist in contributing supporting evidence toward the goal of removing the St. Lawrence River (Cornwall) as an AOC in the Great Lakes-St. Lawrence basin.

The continuation of the MMP throughout the St. Lawrence River will provide valuable insight into the long-term trends in species diversity, occurrence and abundance and will help inform and guide conservation, restoration and management programs for marshes and their bird and amphibian species.

by Katherine Beehler;
St. Lawrence River (Cornwall)
Remedial Action Plan Coordinator

Overall Assessmemt of Marsh Bird and Amphibian Species Diversity in the St. Lawrence River Area of Concern (Cornwall)

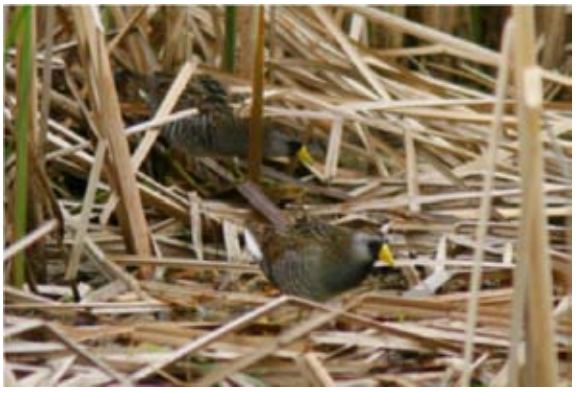
		1995 - 2002	2003 - 2008
Number of Marsh Monitoring Program Routes	amphibians	7	10
	birds	9	7
Number of Stations	amphibians	25	32
	birds	47	18
Marsh Nesting Bird Richness		-	+
Marsh Bird Indicator Species Richness		0	-
Amphibian Species Richness		-	+
Amphibian Indicator Species Richness		-	0
Overall Assessment		1	5

"-' 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.

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

For detailed information on the Marsh Monitoring Program Area of Concern analysis visit http://www.birdscanada.org/mmpaocreport2007.html.

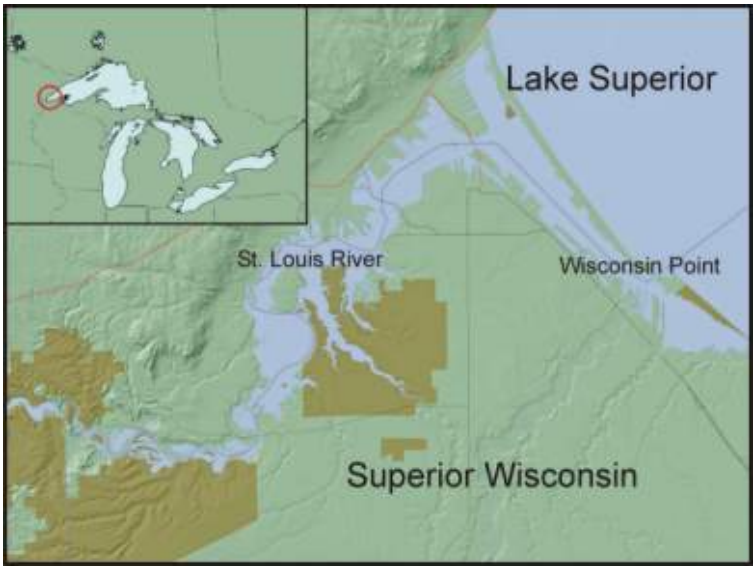
For St. Lawrence River Assessment Results contact Katherine Beehler; St. Lawrence River (Cornwall) Remedial Action Plan Coordinator.



Sora is one of several bird indicator species used to assess Areas of Concern; by Frank Horvath

Volunteers in Action

A New Approach to Marsh Monitoring in the St. Louis River Area of Concern



St. Louis River Area of Concern, Duluth, Minnesota and Superior, Wisconsin; courtesy of Lake Suprior Research Institute

The St. Louis River AOC is a wetland-rich region at the western tip of Lake Superior. In 2008 BSC partnered with the Wisconsin Volunteer Stream Monitoring Program and the Lake Superior Research Institute to integrate volunteer-based wetland water quality and macroinvertebrate sampling with MMP monitoring in this region. A volunteer workshop was held during the spring of 2009 in Superior, Wisconsin. Here, Kris Stepenuck, Wisconsin Volunteer Stream Monitoring Coordinator, tells us about the highs and lows of the first survey season.

Wisconsin's Citizen Water Monitoring Network teamed up with the MMP and the Lake Superior Research Institute (LSRI) to engage volunteers in monitoring Superior-area marshes during the 2009 survey season. The primary goal of the project was to increase wetland monitoring in or near the St. Louis River AOC and to assess the quality of AOC wetlands through a combination of MMP surveys and volunteer-based wetland water quality and macroinvertebrate sampling. Nineteen people were trained to monitor water quality, macroinvertebrates and amphibians at a spring training workshop that tested everyone's hardiness (as the snow was flying). Most workshop attendees were from the Superior area, but some participants travelled from Eau Claire, Madison, and Horicon Marsh in southeastern Wisconsin, with each planning to conduct amphibian surveys back home.

Volunteers monitored five sites within the AOC, and some sites of interest outside of the AOC were also monitored. Sites were visited up to four times during the survey season. On-site water quality measurements included dissolved oxygen, conductivity, pH, temperature and transparency using provided electronic probes. Volunteers also collected water samples that were sent to the University of Wisconsin (UW)-Stevens Point Water Lab and analyzed for nutrients, total suspended solids and chlorophyll a. Macroinvertebrates were collected with nets and preserved for later identification by Dr. Kurt Schmude at UW-Superior. The most common macroinvertebrates found at the sites in the AOC were the amphipod of the genus *Gammarus* and the snail in the genus *Physa*.

Volunteers taking water samples; by Lake Superior Research Institute

***Gammarus fasciatus* (amphipod); by Colin van Overdijk**

***Physella magnalacustris*; by Terrell Hyde and W.A. Smith; WDNR**

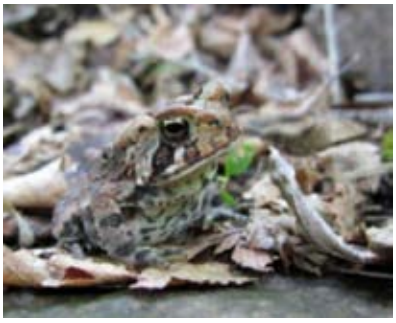
Across most of the Great Lakes region it was a cool, windy summer, and volunteers had difficulty timing their amphibian surveys. This held true in St. Louis River AOC marshes where no amphibians were heard at one site and only two species, Western Chorus Frogs and Spring Peepers, were heard at another -- far fewer species than heard on previous MMP surveys within the AOC.

In 2010 we will focus on MMP amphibian and/or marsh bird monitoring in Superior-area marshes. New volunteers are being recruited to help build the program in both Wisconsin and Minnesota.

by Kris Stepenuk, Wisconsin Volunteer Stream Monitoring Coordinator

Amphibian Species Found in St. Louis River AOC 1995 – 2009

American Toad (*Bufo americanus*)
Chorus Frog (*Pseudacris* sp.)
Gray Treefrog (*Hyla versicolor*)
Green Frog (*Rana clamitans*)
Northern Leopard Frog (*Rana pipiens*)
Mink Frog (*Rana septentrionalis*)
Pickerel Frog (*Rana palustris*)
Spring Peeper (*Pseudacris crucifer*)
Wood Frog (*Rana sylvatica*)



American Toad; by Sandra Horvath

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- MMP metadata
- Downloadable data for birds and amphibians
- Custom data search engine
- Online data request forms

www.bsc-eoc.org/birdmon/mmp

The Coordinator's Page

Reports from the Eastern Edge of the Lake Ontario Basin

Bob McNamara; by Diane Olivo

Sandy Bonanno joined the Marsh Monitoring Program as a regional coordinator in 2007. Here Sandy writes about Bob McNamara, an active naturalist, artist and MMP volunteer from Cleveland, New York.

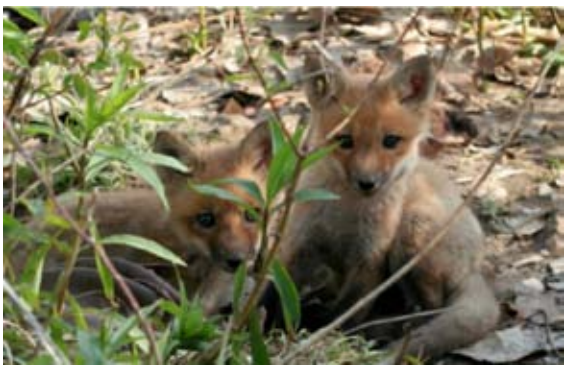
"The best part of volunteering with the MMP is that I am outside in the dark on quiet starlit nights, and so I get to witness some really special moments in the wild, like once at Gorton's Pond, when my brother and I witnessed the explosive peak of Wood Frog breeding. There were waves of their calls, and we could see their eyeshine with our flashlight out over the marsh." Bob McNamara

Wood Frog; BSC files

For the last two years, Bob McNamara has surveyed amphibians at two sites in the Oswego River basin: Toad Harbor Swamp and Gorton's Pond. He lives in Cleveland, New York, just north of Oneida Lake on the southern fringe of the Tug Hill plateau, a location famed for its prodigious snow totals. He says he was coerced by his regional coordinator, but he was the easiest recruit I have ever had!

Bob is a life-long resident of Tug Hill. He is a locally well-known naturalist and conservation activist. Bob is volunteer Chairman of the Tug Hill Tomorrow Land Trust board, a small land trust focused on conservation of the heavily forested Tug Hill region. He is concerned with maintaining a healthy forested landscape that supports sustainable forestry, clean water, and environmentally sensitive recreation.

By day, Bob is a wildlife artist and interpretive naturalist, designing and producing roadside and trailside kiosks and panels that interpret natural and cultural themes to visitors. He edited and illustrated a field guide of his region: *Tug Hill -- a Four Season Guide to the Natural Side*, and most recently illustrated a birding guide to the Great Lakes coastal byway known as the *Great Lakes Seaway Trail: Birding the Great Lakes Seaway Trail*.



Red Foxes; by Frank Horvath

Bob surveys Toad Harbor Swamp from an abandoned railroad grade. This is a large state property that drains directly into Oneida Lake. He notes that this site, large and protected as it is, is impacted by road noise, light pollution, and the noise from an auto race track several miles away. The access railroad grade is also hydrologically disruptive to the habitat. The small marsh at Gorton's Pond, on the other hand, is up in the woods a few miles north of Oneida Lake. This site is undisturbed, quiet, dark, and well-buffered. The difference in the amphibian chorus is dramatic. Small Gorton's Pond is much more diverse and, well,

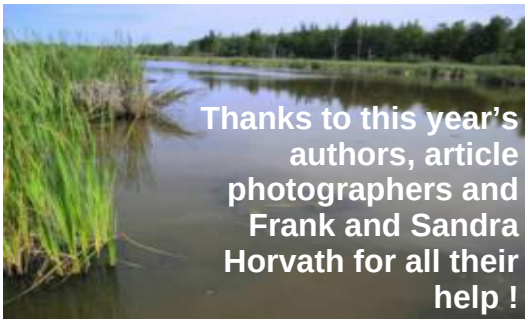
Reports from the Eastern Edge of the Lake Ontario Basin (continued)

Yellow Warbler; by Sandra Horvath

deafening with amphibian calls at monitoring time than Toad Harbor Swamp. He reports one unseasonably warm late March night when he observed Wood Frogs, Spring Peepers, American Toads, and Northern Leopard Frogs all at the same time at Gorton's Pond. On the other hand, one night a red fox happened along the railroad grade while he was at Toad Harbor, much surprised to find it had company at this hour!

Being an MMP observer fertilizes Bob's thinking for the professional interpretive work he does. He has learned more about habitats and the ways of amphibians, and the work ensures that he will continue to do so. This and other citizen science projects he participates in helps build a knowledge base about local places he cares about. Bob has done monitoring for several such bird projects -- for Bicknell's Thrush in the Adirondack High Peaks, for Scarlet Tanager breeding near his home, and he surveyed some very remote and inaccessible blocks for New York's Breeding Bird Survey. He prefers to do amphibian rather than bird surveys for the MMP because his expertise in birds is more with the forest species, and because of his time limitations.

by Sandy Bonanno, MMP regional coordinator, Oswego, New York region



Where are the annual trends?

Presently the Marsh Monitoring Program is undergoing an evaluation of its data analysis procedures. These evaluations are undertaken periodically and are important to ensure we provide high quality results to our partners. Past Marsh Monitoring Program Annual Report and Trends are available at www.birdscanada.org

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A Special Thanks … Bird Studies Canada would like to thank all the 2009 Marsh Monitoring Program participants. Your efforts make this survey successful!

MARSH MONITORING PROGRAM

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