



Muskegon Lake
Watershed Partnership



Muskegon River
Watershed Assembly

Muskegon Lake Views

Muskegon Lake Area of Concern Fish and Wildlife Habitat Restoration Project

March 2010

It's Time to Celebrate

Muskegon Lake Watershed Partnership Habitat Committee

Congratulations Muskegon! Restoration of fish and wildlife habitat has begun at Grand Trunk, the first of nine locations where shoreline fill will be removed (broken concrete, foundry wastes, soil, sawdust and slab wood). It's a great reward for the dedicated individuals and shoreline landowners, private, public and corporate, that have been working toward this goal for many years. The West Michigan Shoreline Regional Development Commission (WMSRDC) developed the grant proposal and is doing an excellent job of administering and managing this very important restoration project. Since the early 1990s, a lot of hard work and effort has been taken to see this day. Restoring fish and wildlife habitat will help to remove three of the nine (9) Beneficial Use Impairments that designated Muskegon Lake as a Great Lakes Area of Concern (AOC) in 1985. Muskegon Lake is one of 43 AOCs in the Great Lakes. Re-establishing a natural ecology to the shoreline restores the fish and wildlife habitat, while improving aesthetics, public access, recreational enjoyment of the lake, and economic vitality to the community. The National Oceanic and Atmospheric Administration (NOAA) Coastal and Marine Habitat and ARRA Program is supporting a large-scale fish and wildlife habitat restoration on Muskegon Lake's south side. Please read on, to find out more about this project. To learn more about how you can be involved with this and other Muskegon Lake Watershed Partnership projects, check out the web site at www.muskegonlake.org. You'll find project updates, studies, events and meeting calendars and contact information.

Muskegon Lake Fish and Wildlife Habitat Restoration

In April, 2009, a ten million dollar fish and wildlife restoration project proposal was developed by members of the West Michigan Shoreline Regional Development Commission, Muskegon Lake Watershed Partnership Habitat Committee, Great Lakes Commission, GVSU Annis Water Resources Institute and Muskegon River Watershed Assembly. The project, selected for funding by the NOAA Coastal and Marine Habitat and ARRA Program, will remove approximately 145,000 cubic yards of unnatural fill to restore 24 acres of aquatic natural resources. Up to 10,000 linear feet of hardened shoreline will be restored with bioengineering and native wetland plantings. It will restore over 8 acres of emergent wetland and 15 acres of open-water wetland.

Muskegon Lake is part of the "Great Lakes coastal wetlands ecosystem," which provides more food and habitat for wildlife than just about any other Great Lakes ecosystem. Great Lakes wetlands are listed by the U.S. Fish and Wildlife Service as "Imperiled Ecosystems." Muskegon Lake is also part of one of the world's largest assemblages of freshwater

sand dunes. Although the lake provides habitat for fish and wildlife that reside in Lake Michigan and the Muskegon River, historical data indicate that populations of lake sturgeon, walleye and white bass have been significantly impaired in the system.

Fill material has eliminated more than 800 acres of shallow water and wetlands in Muskegon Lake. Approximately 75% of the shoreline has been hardened with broken concrete, foundry slag, sheet metal, slab wood, saw dust and other materials. This has resulted in the loss, isolation and fragmentation of shallow water and wetland habitats, their protective buffer zones, and associated problems for fish and wildlife populations. This loss has prevented public access to the lake's natural resources, degraded the quality of life for residents and hampered efforts to attract tourism and businesses to the area. By addressing these problems, the project will generate both ecological and economic benefits for the community.

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The project is designed to improve ecology and the economy. Approximately 125 jobs are being created and retained during the project period. Restoration will result in increased property values and enhanced recreational opportunities. The ultimate removal of the AOC designation is also anticipated to increase adjacent property values, generating more local and regional tourism, business opportunities and jobs. The federal contribution to the project is \$10 million, although the total cost is \$30 million. The value of shoreline property put into permanent conservation easements is also part of the project cost. The anticipated short-term economic impact is between \$53 million and \$89 million. This estimate includes economic activity in the Muskegon Lake region generated by contractors and their employees.

These restoration activities will compliment and build on

the City of Muskegon's comprehensive brownfield environmental assessment designed to prepare for ecological restoration and economic growth along Muskegon Lake's former industrial shoreline.

The schedule for on-the-ground work at the restoration sites is: **March-May:** Grand Trunk and South Branch at Richards Park; **April – June:** Edgewater, YMCA and Heritage Landing Circle; **July – October:** Kirksey Investments, Amoco Peninsula, Ruddiman Creek Lakeshore & Heritage Landing Bay.

WMSRDC is the sub-recipient for the NOAA ARRA Great Lakes Commission grant. WMSRDC is managing and administering the project locally. For more information about the habitat restoration project, contact Kathy Evans, Program Manager, WMSRDC, at 231-722-7878 x17 or kevans@wmsrdc.org.



The map, left, shows specific sites to be restored.

1. Edgewater
2. Grand Trunk – Michigan Department of Natural Resources & Environment
3. Ruddiman Creek and Lakeshore Trail – City of Muskegon
4. Amoco Peninsula – City of Muskegon
5. Kirksey Investments
6. YMCA
7. Heritage Landing Bay—Muskegon Co.
8. Heritage Landing Circle—Muskegon Co.
9. Muskegon River South Branch—Richards Park—City of Muskegon



Great Lakes Legacy Act and Muskegon Lake

By Kathy Evans, WMSRDC

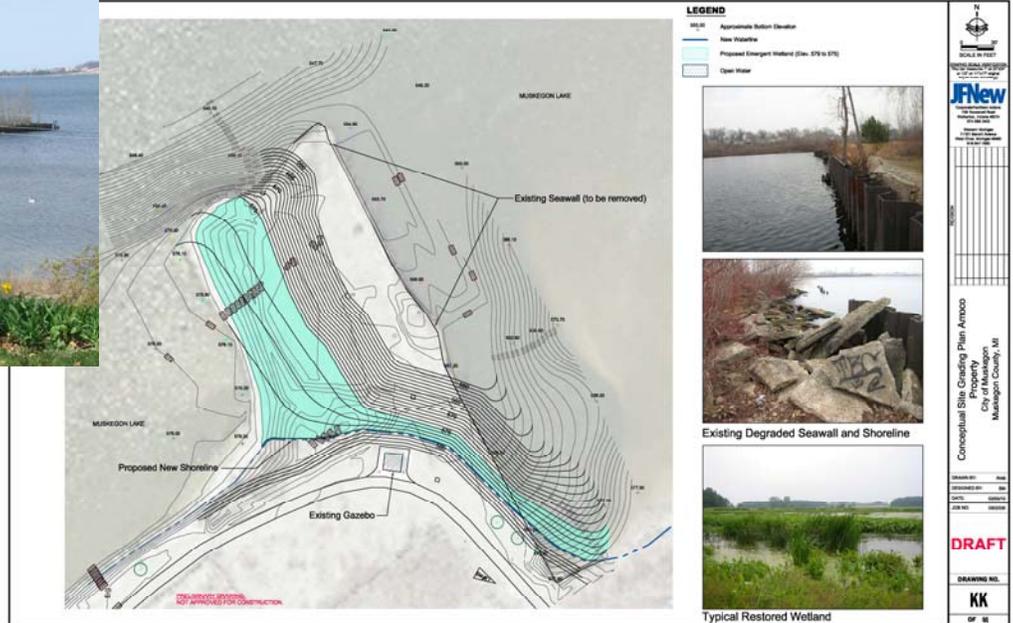
Muskegon Lake's fish, wildlife and aquatic habitat will benefit from another very important Great Lakes restoration program, the Great Lakes Legacy Act. The US Environmental Protection Agency (EPA) and the Michigan Department of Natural Resources and Environment (MDNRE) completed an extensive investigation of the lake bottom within the bay near Hartshorn Marina and the YMCA. The agencies and the public participated in a feasibility study, which concluded that a combination of dredging and natural recovery would be an appropriate and feasible beneficial remedy to address contaminated lake bottom sediments in the 48-acre, recreational area. The project is anticipated to begin in the fall of 2010. It will remove mercury, PAHs and oil and grease within a 48 acre area. The dredging footprint will include approximately 12 acres, with clean sand to be placed as residual cover over the entire area. The sand cover is not a "cap." It is used to accelerate the recovery of the bottom dwelling organisms and other fish and wildlife that rely on the lake bottom for their habitat. The EPA and DEQ are working with the Muskegon Lake Watershed Partnership, local community leaders and agencies to develop the project design, logistics and scheduling of activities. Community support and involvement is critical to the project's success.

To learn how you can help to ensure that it is successful, and to give your ideas about how to get information out to the public, boaters, and other stakeholders, please contact Kathy Evans at (231) 722-7878 x 17.

Support for this newsletter is by a Great Lakes Commission/West Michigan Shoreline Regional Development Commission grant through the "NOAA Coastal and Marine Habitat Restoration and ARRA of 2009 Program".

Wetland Restoration

Remove fill—Soften shoreline



Here at JFNew, we are extremely privileged to be working with such a fantastic team on this unique and challenging project. It's been amazing to see how supportive the entire community and all of the partners on the project have

been, with everyone contributing time, talent, and resources to help make this project a success. Without exception, the City of Muskegon, Muskegon County, and all of the private landowners have gone out of their way to encourage and support the ecological restoration work around Muskegon Lake. We're excited to see construction begin in just a few weeks and witness the results of the years of effort put in by the project team. There is no doubt the people, as well as the environment, will benefit from this project through the rare combination of job creation and ecological restoration.

Control Strategy Released for Asian Carp

Matt Doss, Great Lakes Commission

The U.S. EPA-led Asian Carp Regional Coordinating Committee released the Asian Carp Control Strategy Framework to integrate contributions from federal and state agencies and other partners. The framework is a comprehensive approach that builds on past research, monitoring and control efforts. It outlines short and long-term actions to combat the spread of Asian carp, with a projected cost of \$79 million. The framework was released as federal and state agencies struggle to keep Asian carp from invading Lake Michigan from waterways in the Chicago area. Released from fish ponds in the south, Asian carp have been migrating up the Mississippi and Illinois rivers over the past two decades. In 2009 carp DNA was found in the Lockport Pool on the

Des Plaines River just south of the electric barrier system on the Chicago Sanitary and Ship Canal. In January 2010 carp DNA was found near the mouth of Calumet River and Calumet Harbor and in the North Shore Channel near the Wilmette pumping station. While DNA testing indicates that carp may be present in these areas, no live carp have been found above the electric barrier. At its semiannual meeting, the Great Lakes Commission unanimously passed a resolution calling on Congress and the Army Corps of Engineers to embrace a clear goal of ecological separation of the Great Lakes and Mississippi River watersheds as the best, permanent solution to keep Asian carp and other invasive species from entering the Great Lakes from the Mississippi River watershed.



*Photo from Asian Carp Management website
www.asiancarp.org*



Tracking the Effects of Muskegon Lake Habitat Restoration Efforts

By Elaine Sterrett Iseby, Mary Ogdahl, Paul Iseby & Carl Ruetz, GVSU-AWRI

Researchers at the Annis Water Resources Institute (AWRI) are supporting efforts to restore fish and wildlife habitat in Muskegon Lake. Project partners, West Michigan Shoreline Regional Development Commission (WMSRDC) and the Great Lakes Commission, have identified areas along the south shore of the lake for the restoration of hardened shoreline, creation or restoration of emergent and open-water wetlands, and removal of unnatural fill. As part of the Muskegon Lake Habitat Restoration Project, AWRI is monitoring ecological and economic conditions before and after these restoration activities to evaluate the effectiveness of this work.

Fish Monitoring

Fish community structure provide one indicator of the overall ecological health of Muskegon Lake. The goals of the fish monitoring component of the Muskegon Lake Habitat Restoration Project are:

- 1) To assess the response of the fish community to shoreline restoration, and
- 2) To monitor the ecological health of Muskegon Lake to determine whether restoration targets are being achieved as part of the Area of Concern delisting process.

Fish monitoring is being conducted at restoration as well as control sites (i.e., sites not undergoing restoration) both before and after shoreline restoration to determine the response of the fish community. A fish-based index of biotic integrity (IBI), which includes a number of different indicators, is being used to measure the response of fish for both goals. A high IBI score suggests a relatively “healthy” ecosystem, whereas a low IBI score is indicative of a “degraded” system. A delisting target for the 2 beneficial use impairments involving fish in Muskegon Lake (i.e., the loss of fish habitat and degradation of fish populations) is to maintain or improve the lake’s ecosystem health over a 3-year time span, which equates to an average IBI score of ≥ 36 . The fish monitoring data in 2009 show that Muskegon Lake is exceeding this target (Figure 1).

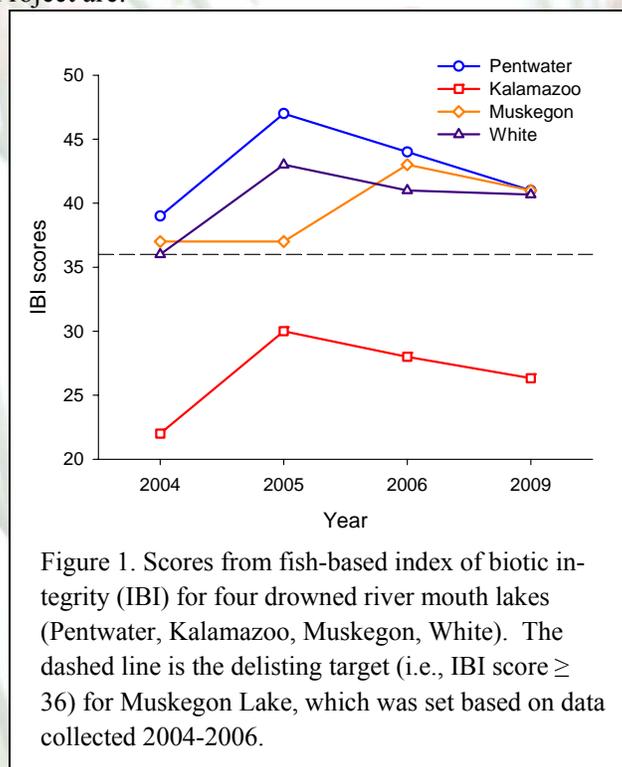


Figure 1. Scores from fish-based index of biotic integrity (IBI) for four drowned river mouth lakes (Pentwater, Kalamazoo, Muskegon, White). The dashed line is the delisting target (i.e., IBI score ≥ 36) for Muskegon Lake, which was set based on data collected 2004-2006.



Macrophyte Assessment

Macrophytes (aquatic plants visible to the naked eye) are excellent indicators of shoreline restoration success because they respond directly to the quality of the restored sediment and shoreline gradient, and provide critical habitat for invertebrate and fish populations. The hardened shoreline and areas of fill along Muskegon Lake’s south shore have dramatically altered the environment for macrophyte growth. AWRI is surveying macrophyte beds in Muskegon Lake both before restoration and after restoration. The surveys will document changes in macrophyte abundance, biomass, and species composition, as well as sediment organic matter. Results from the macrophyte assessment will provide an important indicator of restoration success in Muskegon Lake.

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Socio-Economic Indicators

In collaboration with an economist at GVSU's Seidman College of Business in Grand Rapids, AWRI is evaluating the long term economic value of the Muskegon Lake Habitat Restoration Project. These restoration efforts are expected to improve the value of the Muskegon Lake to area residents and visitors by improving the aesthetics, recreational opportunities, and the many other values provided by the lake. To measure these values, the research team is collecting data on local housing values, recreational uses, and the general benefits that Muskegon Lake is perceived to provide to the community. Last summer, initial data regarding recreation usage of the lake were collected at boat launches, the nature preserve, and selected locations along the lakeshore bike trail. This information is already being used to estimate the value of Muskegon Lake to recreational users prior to restoration. In the Fall, Muskegon County provided us county-wide housing data that will be used for different components of the analysis. Once the restoration work is completed, additional data will be collected to show the change in value resulting from these improvements to the lakeshore.

Grand Trunk Restoration Partnership and NOAA ARRA

The volunteer-based Grand Trunk Restoration Partnership (GTRP) will host the 20th Annual Muskegon Lake Grand Trunk Shoreline Restoration Day, on May 14, 2010, beginning at 9:00 a.m. The GTRP includes former paper mill community service employees with USW Local 1015, Lakeside Neighborhood Association, Bunker, Steel and Nims Schools, Lakeside Business Association, City of Muskegon, Muskegon Conservation District, United Way of the Lakeshore, Muskegon Lake Watershed Partnership and the general public.

In 1990, a handful of union members started a simple cleanup that now annually draws more than one hundred concerned citizens to the shores of Muskegon Lake. Over the years, improvements have included the removal of tons of junk and garbage; control of invasive species, native plantings and stormwater filters; shoreline concrete removal; birdhouse installation, planting a peace garden and the building of a picnic pavilion. An important aspect of this effort is working side by side with the students and teaching them the importance of protecting Muskegon Lake and its shoreline habitat. Since the work began, the area changed from a lakeside dump-site to a safe place for families and nature. Many local, state and federal agencies and organizations have supported these projects through grants, cooperative agreements and charitable contributions.

Members of the GTRP

provided input to the West Michigan Shoreline Regional Development Commission to develop the design that will restore wetlands under the NOAA Coastal and Marine Habitat Restoration and ARRA Program. According to Mark Evans, leader of the GTRP and member of the Muskegon Lake Watershed Partnership, "We were very pleased to be involved in the site planning for the work to be done at Grand Trunk. The shoreline, currently filled with foundry waste and broken concrete, will be transformed into natural wetlands with native plants." Local school teachers are currently developing curriculum for their students to monitor and maintain the new plantings and documenting their success. JFNew is developing a post-restoration maintenance plan, designed especially for the volunteers and students. Schools will also use the restoration project to help them meet the goals of the Great Lakes Stewardship Initiative, a program of the Muskegon Area Intermediate School District. Dave Craymer, a Bunker School science teacher who has involved his students in outdoor education at Grand Trunk, noted that "The NOAA project will be a huge boost in our effort to restore the site and we look forward to using it as an outdoor classroom in the future."

To become involved with the Grand Trunk Restoration Partnership, or the May 14 event, please contact Mark Evans at 231-343-4462 or mevans1899@yahoo.com.



Overwhelming Demand for Restoration Resources under the GLRI

The US Environmental Protection Agency and NOAA continue to do their part to carry out President Obama's Great Lakes Restoration Initiative. NOAA is administering \$10 million for Great Lakes projects, and in January, 2010 NOAA invited proposals for projects that help to delist Areas of Concern by restoring wetlands for the benefit of native fish and habitats; removing marine debris or addressing local and regional planning priorities. NOAA will support projects ranging from \$1 to \$1.5 million; that can be completed within two years. Projects need to include an effective monitoring plan and on-the-ground restoration. The deadline for proposals was February 15. In response, NOAA received 52 proposals requesting \$61 million. Similar to the volume of proposals submitted to EPA, there was a six-to-one demand for support from NOAA versus the funding available. In its first request for proposals under the GLRI U.S. EPA encountered overwhelming demand for resources to restore the Great Lakes. With approximately \$120 million available, U.S. EPA received more than 1,000 proposals requesting nearly one billion dollars. Other agencies faced similar demands for their initial GLRI offering, including the U.S. Fish and Wildlife Service, which received 167 proposals seeking \$44 million. The GLRI is administered by the U.S. EPA, which receives funding from Congress and then distributes it for administration to other federal agencies. President Obama has requested \$300 million for the next fiscal year. For more information on NOAA's program, contact Terry Heatlie at 734-741-2211, terry.heatlie@noaa.gov

Action Plan Outlines Goals and Actions for GLRI

U.S. EPA released a comprehensive, five-year action plan for the GLRI that identifies goals, objectives, measurable ecological targets, and specific actions for each of the Initiative's five focus areas. The Action Plan will be used by federal agencies in the development of the federal budget for Great Lakes restoration in fiscal years 2011 and beyond. It projects a five-year price tag of \$2.2 billion for the GLRI. The GLRI establishes goals to restore Areas of Concern (AOC), including the delisting of five AOCs; removal of 46 beneficial use impairments; and remediation of 9.4 million cubic yards of contaminated sediments by 2014. The GLRI also seeks to remove 30 habitat-related impairments in the AOCs. Throughout the five-year GLRI process, federal agencies will identify specific actions they will take to implement the Action Plan on an annual basis. The U.S. EPA will assure that the Action Plan's goals, objectives, and targets are aligned with those of Great Lakes state, municipal and tribal governments. The Action Plan is available on the GLRI website at <http://greatlakesrestoration.us/>.

Website provides links to GLRI documents and resources

The Statewide Public Advisory Council for Michigan's Great Lakes Areas of Concern Program has established a website with links to documents and resources related to the Great Lakes Restoration Initiative (GLRI). The site is intended to provide a single place to find information that may be useful to stakeholders who are interested in the Initiative or involved in developing funding proposals. The links will be updated continuously as the GLRI moves forward. The site is online at <http://glc.org/spac/glri.html>. Contact Matt Doss, mdoss@glc.org at Great Lakes Commission for more information.



Hardened shoreline along Ruddiman Creek will be softened through the Muskegon Lake Fish and Wildlife Habitat Restoration Project

Marsh Monitoring in the Muskegon Area

By Carolyn Weng, Regional Coordinator—Great Lakes Marsh Monitoring Program

Have you been kept awake at night by spring peepers (one-inch frogs with giant voices)? They are helping tell us if our local marshes are healthy. Healthy marshes contribute to a healthy Muskegon Lake. Wetlands, including marshes, are called “nature’s kidneys” because they improve water quality by filtering and absorbing pollutants running into water bodies and groundwater. They can help recycle some of the nitrogen runoff from our lawns and are nurseries for native fish, tadpoles, and the young of nesting marsh birds and other species.

Since 1995, volunteers with the Great Lakes Marsh Monitoring Program (MMP) have been collecting data that scientists are using to assess the health of marshes. The program focuses on areas where coastline filling or pollution from industrial and other uses have reduced or degraded marshes. It is one of the many bi-national efforts between the U.S. and Canada to improve Great Lakes water quality.

How do volunteers collect

data? After training, they listen for amphibian calling during the spring breeding season, identify the species of frogs and toads present and estimate their abundance. Those who know birds, use both eyes and ears to survey nesting marsh birds. From the resulting database (maintained by Bird Studies Canada for whole of the Great Lakes), scientists learn if marshes have the diversity and productivity expected for that particular area. In Muskegon we are using the Program to collect baseline data on a wide variety of the Muskegon Lake watershed marshes, at Green Creek and Bear Lake in the north, along Ruddiman and Ryerson Creeks flowing in from the south, as well as at marshes along the bike path and other lakeshore locations. Surveying will continue after habitat improvement projects such as those starting this year along the south shore of Muskegon Lake in order to evaluate restoration efforts.

Visit the following link to the MMP page on Bird Studies Canada website; also check out the recent MMP newsletter there.
<http://www.bsc-eoc.org/volunteer/glmmmp/index.jsp>

Muskegon Lake Bike Path Marsh

Deb Knapp

Here we go, our 3-member Marsh Monitoring Team—one to survey, two others to keep the surveyor company. Lights, action [froggies], and clipboards. With head lamps in place, we carefully step down our neighbor's stairs [permission granted] to the boardwalk and station #1, the most popular to our froggie friends because of its cattails. Such a treat to be on the boardwalk at night, peaceful, safe [three of us] and quiet—hopefully not too quiet! It all started Earth Day 2008 at McGraft Park for training, and here we are in 2010 still documenting frog songs for the Great Lakes Marsh Monitoring Program. We have a 2nd station near the old Amoco dock pilings. This area has shown no signs of frogs, therefore the easier area to document. We are thrilled to be part of a major improvement project for Muskegon Lake with our data collection that will hopefully show major improvements in the years to come.

You never know where something will take you, jump in there and get involved. Data collected, we'll be together again next month for a brief, peaceful time depending on the temperature, wind and precipitation. Such fun.



What's Happening in our Marshes?

Mary and Bob Wygant

We are interested in water quality and the impact that humans have on marsh lands so we signed up for MMP training. We started the monitoring as a team, which we highly recommend. It is always easier walking around on dark nights with a companion. We also use lights attached to head-bands to have hands free for filling in the datasheets.

It has been relatively easy to monitor Green Creek because we can listen from a road bridge. One year there was a lot of daytime construction going on in the area but surprisingly this didn't seem to affect the frog population.

We checked with the North Muskegon Police Preserve because this area is supposedly closed during evening hours. Not true! During our after dark surveys we frequently encountered individuals fishing, walking, and biking. One evening we were almost run over by two young boys on their bicycles—another good reason to have some sort of lights showing.

Overall it has been an interesting experience that does not involve a great deal of time.

Bear Creek/Bear Lake Marshes

Jerry Lang

My wife and I monitor marshes associated with the old celery flats at the east end of Bear Lake. What once grew celery for the Chicago produce market is now covered with several feet of water and grows algae, aquatic weeds, fish, and wildlife as nature slowly cycles the land back to “maskig aki” as the Algonquins called the surrounding marshes.

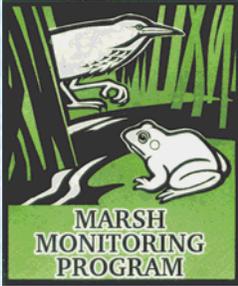
Monitoring has become an annual ritual for me marking the cycle of seasons and life. What a welcome promise of spring when the first spring peepers begin their tentative calling that soon grows to an almost deafening chorus. I'm always amazed that a tiny amphibian can function in the chilly 40-degree nighttime temperatures. The cross markings on the backs of spring peepers (*Pseudacris crucifer*) seem an appropriate symbol for their resurrection out of a winter spent frozen solid in the mud.

Once started by the peepers, the celebration of spring continues with the added voices of American toads, chorus frogs, tree frogs, and, eventually, green frogs. There is even the possibility of hearing an occasional bullfrog later in the season. Each species appears on the “marsh stage” in a similar sequence every year.

The calls of frogs and toads from the marshes near Bear Lake along with other natural events such as returning migratory birds, the first spring wildflowers, and the familiar insect sounds of summer bring a peace in their constancy and predictability amid a world with so much conflict and chaos.

Great Lakes Volunteer Marsh Monitoring Program

The public is invited to learn more about the Muskegon Lake NOAA Coastal and Marine Habitat and ARRA program, and Bird Studies Canada's Volunteer Marsh Monitoring Program (MMP). The MMP is the only Great Lakes-wide volunteer program that involves citizens in monitoring wetland health.



To RSVP for the meeting, please contact Kathy Evans at WMSRDC—231-722-7878x17 or kevans@wmsrdc.org

*March 31, 2010—7:00 p.m.
Muskegon Community College
Blue and Gold Room*



Presentations will be given by Kathy Evans, Program Manager, West Michigan Shoreline Regional Development Commission, and Carolyn Weng, Volunteer Coordinator, Great Lakes Marsh Monitoring Program.

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