



## **U.S. Environmental Protection Agency Great Lakes National Program Office Significant Activities Report**

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### **Presque Isle On the Mend**

Significant improvements in the environmental health of the Presque Isle Bay, Pennsylvania Area of Concern (AOC) on Lake Erie has prompted the USEPA to upgrade the bay to an "AOC in recovery stage" from the previous designation of simply "AOC."

The re-designation recognizes the improvements made over the 11 years since Presque Isle Bay was designated as an AOC. Presque Isle Bay is located in the northwestern corner of Pennsylvania on the southern

shore of Lake Erie. Most of the watershed is comprised of urban and industrial areas within the City of Erie and Millcreek Township.

The request for a change in status was formally submitted to EPA on Oct. 2<sup>nd</sup> by the Pennsylvania Department of Environmental Protection. This is the first AOC in the nation to be upgraded to recovery status.

In 1988, local citizens from Erie County, Pa. petitioned the International Joint Commission Science Advisory Board to recommend that the Bay be an AOC. In 1991, the Commission requested that the U.S. Government make this designation after research concluded fish tumors and restrictions of dredging activities indicated substantial sediment contamination. The U.S. Department of State officially made the designation on January 30, 1991.

Several studies indicate improvements in the bay - the incidence of fish tumors has dropped dramatically and sediments have proven less toxic than originally believed. Under EPA guidelines, the new status calls



Presque Isle Bay on Lake Erie at Erie, Pennsylvania

for a pollution prevention plan, and a monitoring program to reduce the risk of future degradation and ensure that recovery continues.

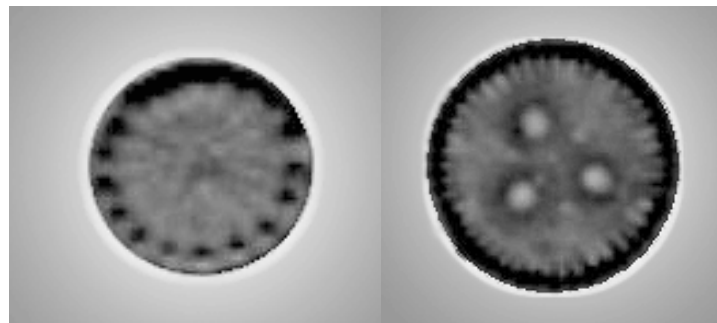
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### Winning the Battle in Lake Michigan

A recently published scientific paper shows the benefits of reducing phosphorus loadings to Lake Michigan. High phosphorus loads in the 1960's and 70's spurred the Springtime population growth of diatoms, one of the most common types of phytoplankton (tiny floating plants) in the lake. This explosive diatom growth each Spring used up all the silica in the water, preventing further diatom growth in the Summer. Since only diatoms require silica for growth, Summer communities shifted to other types of phytoplankton, a departure from the historical condition of year-round dominance by diatoms. Public concern over the eutrophication (premature aging) of the Great Lakes resulted in signing of the Great Lakes Water Quality Agreement in 1972 between the United States and Canada. As part of the effort to reverse the degradation of the lakes, phosphorus reduction programs were undertaken under the Agreement.

The restoration of Lake Erie dramatically showed the success of the phosphorus controls. Evidence of recovery in Lake Michigan has been more elusive. But now, the paper "Evidence of Recovery from Phosphorus Enrichment in Lake Michigan," published in the *Canadian Journal of Fisheries and Aquatic Sciences*, shows for the first time the benefits of phosphorus load reduc-

tions to the Lake Michigan ecosystem. The paper uses 18 years of data, collected as part of the Great Lakes National Program Office's annual open-lake monitoring program, to track a complex chain of interactions from phosphorus to silica to diatoms. The authors found that reductions in phosphorus loads, the main driver of diatom growth, have resulted in a steady increase in Spring soluble silica concentrations between 1983 and 2000 as smaller annual diatom populations have taken less silica with them as they die and settle to the bottom of the lake. With a smaller annual loss of silica, concentrations of this element have been able to build up steadily over the past twenty years. The reduction in Spring diatom populations, resulting from decreases in phosphorus



*Stephanodiscus parvus*

*Cyclotella ocellata*

Some common Lake Michigan diatoms

loading, has also meant more silica 'left over' for Summer diatom growth, bringing about a return of substantial Summer diatom populations in the lake for the first time in over thirty years. Therefore, while annual diatom production has decreased, it has also become more 'spread out' over the year, as was the case in the lake before it was impacted by excessive phosphorus loading. The Summer diatom response to increased silica was particularly apparent beginning in the early 1990s. It thus appears that the phytoplankton community has begun to shift back towards its historical condition of

year-round diatom dominance. These results provide the first conclusive evidence that phosphorus load reductions are having a positive impact on the Lake Michigan ecosystem.

The authors of the paper were Rick Barbiero of DynCorp; and Marc Tuchman, Glenn Warren and David Rockwell from GLNPO. The paper is in the October 2002 (Volume 59, Number 10) of the Canadian Journal of Fisheries and Aquatic Sciences on pages 1639 to 1647.

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### Tannery Bay Cleanup Highlighted

On November 7<sup>th</sup>, a press conference was held in Whitehall, Michigan to highlight the sediment cleanup activities at the White Lake, Tannery Bay site. This project is a joint effort between the Michigan Department of Environmental Quality (MDEQ) and USEPA. When completed, about 75,000 cubic yards of tannery waste contaminated with chromium, arsenic and mercury will be removed.



Suction dredge removing Tannery Bay sediments

The sediment contamination was the result of some 30 years of discharges from the tannery (1944 through 1976). A settlement

reached between MDEQ and Genesco, Inc, provided \$3.3 million towards the project. The remaining funds were supplied by a grant for \$500,000 from GLNPO to MDEQ and from Michigan Clean Michigan Initiative Funds.

The press conference was attended by Tom Skinner, USEPA Region 5 Administrator and Great Lakes National Program Manager; Russell J. Harding, Department of Environmental Quality Director; Dennis L. Schornack, International Joint Commission U.S. Section Chairman; Norm Ullman, Mayor of Whitehall, and other local officials.

Another cleanup in White Lake, at the Occidental Chemical site is slated for the summer of 2003.

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### Carp News

USEPA, the U.S. Army Corps of Engineers, and the State Department worked in partnership to provide emergency funding to buy and install a backup power system for the existing aquatic nuisance species dispersal barrier in the Chicago Sanitary and Ship Canal near Lockport, Illinois. The backup power will ensure operation of the barrier in the event of a failure with the primary power system. USEPA's Office of Water provided \$150,000 for the purchase. The Army Corps constructed the barrier under the authority of the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 as a demonstration of an innovative technology for preventing the migration of aquatic nuisance species between the Great Lakes and Illinois River basins. The Corps is continuing the operation of the barrier as the only line of defense against the imminent threat of Asian carp migrating into the Great Lakes from the Illinois River. Two



Dispersal Barrier Control Room  
(Photo courtesy of Phil Moy, Wisconsin Sea Grant)

species of asian carp are advancing their way up the Illinois from the Mississippi River toward the Great Lakes and have the potential to severely impact the biological integrity of the Great Lakes. (See related stories in the [May](#) and [September-October 2002](#) issues of the Significant Activities Report).

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In related news, on November 25<sup>th</sup>, U.S. Congresswoman Judy Biggert convened a roundtable discussion at the Romeoville, Illinois Village Hall on the Asian Carp and the dispersal barrier project. The dispersal barrier and a large segment of the Chicago Sanitary and Ship Canal resides in her district. In attendance were representatives from the U.S. Army Corps of Engineers; the International Joint Commission; the Great Lakes Fisheries Commission; the Fish and Wildlife Service, the Mississippi Interstate Cooperative Resource Association (MICRA); and the Illinois Natural History Survey.

Short presentations were made by Congresswoman Biggert, IJC Commissioner Dennis Schornack (IJC); and the Corps of Engineers on the status of the barrier; and

Jerry Rasmussen from MICRA on the Asian Carp threat. After the presentations, Congresswoman Biggert led a discussion and inquired as to the kinds of monitoring underway to determine the effectiveness of the barrier and plans to construct a second barrier. She voiced her support for the effort, including the continued operation of the existing barrier. Following the briefing a visit to the site was conducted by the Army Corps of Engineers.

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### **Here they Come, From All Over the World**

After EPA Headquarters, EPA Region 5 and the Great Lakes National Program Office receive the greatest number of foreign visitors to EPA. Fiscal year 2002 (ending September 30, 2002) saw a total of 223 foreign visitors to Region 5. Over one-third of the visitors met with GLNPO staff. The countries represented included Argentina, Armenia, Brazil, Canada, Chile, China, Estonia, Germany, India, Ireland, Israel, Korea, Latvia, Lithuania, Japan, and Poland. Most of the visitors wanted to learn how EPA handles the kinds of issues that these countries are facing or will soon be confronting.



GLNPO receives visitors from all over the globe



There are several reasons for the visitors' keen interest in the Great Lakes:

- Many of the visitors' countries now have the kinds of problems that the Great Lakes faced 20 to 30 years ago and the visitors want to learn how the Great Lakes were restored.
- Since many of their countries have trans-boundary pollution issues (their waters are being impacted by other countries), they are eager to learn how about the binational efforts to protect and restore Great Lakes, which are seen as a model for international cooperation to protect a shared resource.
- Finally, many of them are interested in how the ecosystem approach is used to attack problems holistically instead of piecemeal like the traditional media by media approaches.

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### Dental Waste In Its Place

A symposium was held on December 2<sup>nd</sup>, in Chicago, Illinois entitled "Dental Mercury: Reducing the Environmental Impact." The meeting was sponsored by the Great Lakes Binational Toxics Strategy (mercury is one of the chemicals targeted for reductions by that program). Over 70 people attended, including members of the dental community, academia and government from both the United States and Canada. Presentations included:

- *Assessing the Fate and Impact of Dental Amalgam*, three separate presentations by Philip Watson, University of Toronto; Jay Vandeven, Environ Corporation; and Peter Berglund, Metropolitan Council Environmental Services,
- *Amalgam Recycling Potential*, presented by James Drummond, University of Illinois-Chicago,

- *Waste Management Strategies and Opportunities*, presented by Linda Samek, Ontario Dental Association,
- *Evaluation of Amalgam Separation Equipment*, presented by P.L. Fan,
- *Practical Considerations in Managing Dental Wastes and Amalgam Separators*, presented by Kevin McManus, EBI Consultants, and
- *The Proper Place for Dental Waste: Dental School Curriculum Development*, presented by Nancy Larson, Kansas State University.



Dental amalgam can be a significant source of mercury to wastewater

Later, several case studies were presented to show the impacts of mercury amalgam and the practical applications of the mercury reduction techniques presented earlier:

- *Duluth, Minnesota*, presented by Tim Tuominen, Western Lake Superior Sanitary District,
- *Toronto, Ontario Canada Sewer Use By-Law*, presented by Robert Krauel, Environment Canada,
- *King County, Washington*, presented by Gail Savina, King County Hazardous Waste, and
- *Northeast Ohio*, presented by Keith Linn, Northeast Ohio Regional Sanitary

District.

Finally, a closing panel discussion: Charting a Path Forward was led by Navy Commander Dr. John Kuehne, DDS from the Naval Institute for Dental and Biomedical Research and Dr. Keith W. Suchy, DDS, the Secretary of the Chicago Dental Society.

Proceeds of this Symposium should be published in January 2003.

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### Toxics Linkages

Over 80 people attended the Semiannual Stakeholder Forum of the Great Lakes Binational Toxics Strategy (GLBTS) in Chicago on December 3<sup>rd</sup>. The theme of the gathering was "Linkages." Invited speakers showed how the toxics reduction activities of the GLBTS were related to other such reduction efforts at various scales from local to global. Greg Filyk, the Acting Chief of the Hazardous Air Pollutants Group at Environment Canada in Ottawa spoke about global toxic reductions efforts. Victor Shantora, the Acting Executive Director of the North American Commission for Environmental Cooperation on the Commission for Environmental Cooperation spoke about that organization's coordinated toxics reduction efforts between the U.S., Canada, and Mexico. Finally, Kevin Schnoes of the Chicago Department of Environment, described the City of Chicago's efforts to help industry reduce the use and releases of toxic substances through its "Industrial Outreach Program."

As in past GLBTS Stakeholder Forums, the GLBTS Workgroup Chairpersons provided updates on their groups efforts to reduce specific toxics, including PCBs, dioxins and furans, mercury, benzo(a)pyrene, hexa-



Toxics can be transported around the globe by air, so coordinated cooperative control efforts are needed

chlorobenzene, pesticides, alkyl-lead, and octachlorostyrene. The annual summary of progress under the Great Lakes Binational Toxics Strategy will be available in February 2003. For more information on the Great Lakes Binational Toxics Strategy, and its toxics reduction activities, visit their Web Site at: <http://www.epa.gov/glnpo/bns> (Contact: Ted Smith, 312-353-6571, [smith.edwin@epa.gov](mailto:smith.edwin@epa.gov))

### International Coastal Wetlands Effort Nears Half-Way Mark

In September 2002, USEPA's Great Lakes National Program Office awarded the third and final Cooperative Agreement to the Great Lakes Commission to support the work of the Great Lakes Coastal Wetlands Consortium. All three Cooperative Agreements have been funded at \$400,000, with another \$200,000 in match from the Consortium members.

There are 41 member organizations, including scientific and policy experts drawn from key U.S. and Canadian federal agencies, state and provincial agencies, non-governmental organizations, and other interest groups with responsibility for coastal wetlands monitoring. This is an unprecedented assembly of coastal wetlands expertise. In addition, other members are brought in as small project teams are formed to ad-



Coastal wetlands around Search Bay  
in northern Lake Huron  
(Photo by Ted Cline, 1996)

dress discrete project elements and pilot studies. The Consortium is coordinated by staff at the Great Lakes Commission in Ann Arbor, Michigan. The Consortium is just finishing its second year of a 4-5 year project. The ultimate goal of the Consortium is to design an implementable, long-term monitoring program for Great Lakes coastal wetlands. This will allow the United States and Canada to better fulfill the reporting requirements under the Great Lakes Water Quality Agreement. The biennial State of Lakes Ecosystem Conference is the reporting platform utilized by the two countries. For more information on this project, go to [www.glc.org/wetlands](http://www.glc.org/wetlands).

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### What Have They Done to the Bay?

The zebra mussel invasion of Bay has changed the Saginaw Bay ecosystem. It has caused a shift of energy flow from pelagic (open water) to the benthic (bottom) components, potentially impacting every component of the food web. To help understand this phenomenon, working under a grant from GLNPO, the State University of New

York - Buffalo developed a “coupled benthic-pelagic ecosystem model” for Saginaw Bay.

The model helps quantify how primary production is partitioned between pelagic and benthic communities and how the distribution varies with zebra mussel densities and nutrient loadings. The Final Report for the grant describes the overall modeling approach and the linkage of different models to synthesize the physical, chemical, and biological processes of Saginaw Bay as it undergoes invasion by zebra mussels. The integration of eutrophication and toxic chemical models with a benthic-pelagic coupling represents an ecosystem modeling approach. The principle outcomes of this work are the better understanding of the ecosystem stress-response relationships and the benthic-pelagic coupling in the Saginaw Bay ecosystem, and the use of the model to forecast the possible future states of the bay as a result of changes in external stressors such as nutrient loadings and zebra mussel densities.

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Saginaw Bay from NASA Image Collection

## Weighing the Evidence

On November 22<sup>nd</sup>, GLNPO's Scott Cieniawski was in Saginaw, Michigan to deliver a presentation entitled *Using the Weight of Evidence Approach for Making Sediment Management Decisions* at the conference for the Michigan State-wide Public Advisory Council sponsored by the Great Lakes Commission. The presentation focused on the use of multiple lines of evidence (sediment chemistry, whole sediment toxicity testing, benthic community assessments, and bioaccumulation studies) to monitor the impact of contaminated

sediments on beneficial uses in the Great Lakes Areas of Concern. The talk also touched on the expected completion of the



Balance scale

Sustainable Fisheries Foundation's *Guidance Manual to Support the Assessment of Contaminated Sediments in Freshwater Ecosystems*, scheduled for publication in early

2003. The guidance manual provides an in-depth discussion of the "weight-of-evidence" approach and identifies the strengths and weaknesses of each line of evidence.

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Great Lakes Areas of Concern in the U. S. and those shared with Can-

## New Sediment Cleanup Tool

On November 27<sup>th</sup>, President Bush signed the Great Lakes Legacy Act into law. The Act authorizes the expenditure of up to \$50 million per year for 5 years, starting in October 2003 to help cleaning up contaminated sediment sites at Great Lakes Areas of Concern. It also authorizes up to \$3 million per year for research and development on innovative treatment technologies and \$1 million per year for education/outreach activities. Congress would still have to appropriate the funds for the program in order for it to go forward. Information on Areas of Concern can be found at: <http://www.epa.gov/glnpo/aoc>.

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We welcome your questions, comments or suggestions about this month's Significant Activities Report. To be added to or removed from the Email distribution of the Significant Activities Report, please contact Tony Kizlauskas, 312-353-8773, [kizlauskas.anthony@epa.gov](mailto:kizlauskas.anthony@epa.gov).