

Wisconsin Great Lakes Chronicle
2003



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Peninsula State Park in Door County is among Wisconsin's most popular camping destinations.



FOREWORD

Governor Jim Doyle

Dear Friend of Wisconsin's Great Lakes:

In 2003 – Wisconsin's Year of Water and the 25th anniversary of the Wisconsin Coastal Management Program – I am pleased to join citizens from around the state in celebrating and safeguarding our greatest natural resource, the Great Lakes.



Lake Michigan and Lake Superior have profoundly influenced Wisconsin's history. Today, Wisconsinites continue to rely upon these major waterways for leisure, clean water, unique wildlife and international commerce.

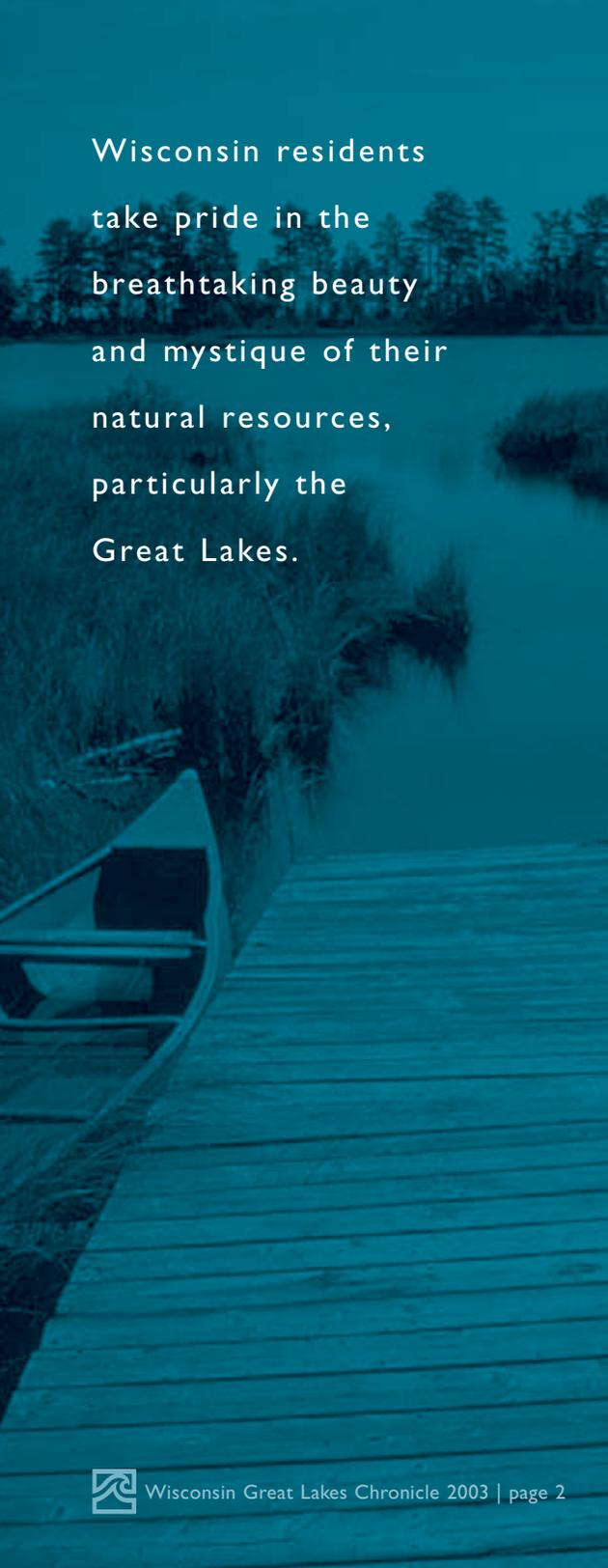
While our Great Lakes and their coastlines remain particularly vulnerable to environmental degradation, I am pleased to report that we are making significant progress toward a cleaner, healthier Great Lakes system. Here are some examples to date:

- The Wisconsin Department of Natural Resources and the U.S. Environmental Protection Agency recently released the Record of Decision on the plan for cleaning PCB-contaminated sediment from a 13-mile portion of the Lower Fox River. After decades of study, discussion and debate spanning several administrations, we are finally poised to move forward with the cleanup of the Fox River.
- The Wisconsin Coastal Management Program and its partners together provided \$13 million for the acquisition, cleanup and restoration of lands along Lakes Michigan and Superior. Cleaner, more vibrant Great Lakes benefit all Wisconsinites. These projects protect wetlands, restore critical habitat and enhance public access to our state's coasts.
- In 1990, Congress required coastal states to create nonpoint pollution control programs. After more than a decade of effort, Wisconsin's coastal nonpoint program gained approval from the National Oceanic & Atmospheric Administration and the U.S. Environmental Protection Agency. Today, Wisconsin's program serves as a national model that addresses nonpoint source pollution from urban impacts, marinas, forestry, agriculture, and hydromodification.

The coasts and water we protect today will benefit our children for years to come. However, we must also help our children build a foundation of knowledge that enables them to continue our work. To that end, the Wisconsin Coastal Management Program celebrated its 25th anniversary by giving a special version of the classic children's book *Paddle to the Sea* to the state's elementary school and public libraries. The book inspires our children – and their parents – to enjoy and protect Wisconsin's Great Lakes.

Wisconsin's Great Lakes shaped our history and will sustain us in the future. Working together, we will ensure that the waters of Lakes Michigan and Superior will be clean and accessible in the decades to come.

Enjoy this year's edition of *Wisconsin Great Lakes Chronicle*.



Wisconsin residents
take pride in the
breathtaking beauty
and mystique of their
natural resources,
particularly the
Great Lakes.

WISCONSIN LOVES ITS GREAT LAKES

Jane Elder

In 2002, a public opinion research project commissioned by the Biodiversity Project examined public attitudes about the Great Lakes. The Great Lakes study included focus groups in Milwaukee, Grand Rapids, Michigan, and Columbus, Ohio. It also included interviews with policy makers and a 1,500-sample telephone survey across Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin, and portions of New York and Pennsylvania.

What have we learned?

Wisconsinites love their Great Lakes. Although Michigan leads the pack in public fervor for this amazing resource, Wisconsin is not far behind in regional appreciation for the Great Lakes. More importantly, state residents feel a sense of responsibility to care for them.

A Source of State Pride

Wisconsin residents take pride in the breathtaking beauty and mystique of their natural resources, particularly the Great Lakes.

Roughly one quarter of Wisconsinites say the Great Lakes are “one of the reasons I live here,” and 77 percent acknowledge that the Lakes are “vital to the economy of the region.” This tells us that people who live near the Great Lakes recognize the recreational and economic importance of the resource. Not surprisingly,

those who live closest to the Lakes and those who visit them frequently were among the most concerned about their fate.

Great Lakes beaches and parks are popular destinations for Wisconsin residents. Across the region, 57 percent of adults said they had been to a beach or park on one of the Great Lakes within the last year. Whether hiking along the Lake Superior shoreline, boating on Lake Michigan or just strolling on a beach, residents take advantage of Wisconsin’s access to these magnificent bodies of water.

Of particular interest, Wisconsin citizens trust their leaders and neighbors to be good stewards of the Lakes. During a Wisconsin focus group in a separate study last summer, a woman responded to a question about beach closings in this way: “Well, you’d expect something like that in Illinois, but not around here!” People recognize that the state has special places that families return to from one generation to the next and the commitment to take care of Wisconsin’s natural beauty and resources helps make them special.

A Sense of Responsibility

Not surprisingly, this deep appreciation for the state’s natural resources leads Wisconsin residents to regard the Great Lakes and other water resources as cherished treasures, not commodities.



Wisconsinites sense that these treasures belong to everyone, and therefore all share a responsibility to protect them. The notion that water could be commercialized or privately owned, or that Great Lakes protection is someone else's problem, is antithetical to Wisconsin values. Instead, a sense of the common good and protecting their children's future overrides personal privilege and private interests.

Can Something so “Great” be so Vulnerable?

It is heartening to know that people appreciate the remarkable Great Lakes, but many residents do not grasp that there are serious threats to the ecosystem – threats that go well beyond pollution.

The survey showed that Great Lakes residents, including Wisconsin respondents, understand some threats to the Great Lakes. Toxic pollution leads the list with zebra mussels and invasive species not far behind. However, other dangers to the Lakes are poorly understood.

For example, people in the focus groups were largely unaware of the relationship between groundwater and surface water in the region. People who depend on well water understand concepts such as the water table better than people who drink city water. However, the impact of groundwater depletion on the Great Lakes –

especially on near-shore or upstream habitat – simply is not yet on the radar screen. This is a particular challenge in Wisconsin where many communities just beyond the Great Lakes basin consume groundwater at rates that may pull water out of underground sources that supply the Great Lakes. This can affect everything from temperatures and water flow in trout streams to water supply for shoreline marshes and other important nesting and breeding areas.

Without the knowledge that a serious problem exists, many citizens will not see the need to act. However, research in the last several months indicates that a substantial portion of Wisconsin residents understand that groundwater shortages cause more communities to look for ways to tap directly into the Great Lakes.



What Next?

To protect the Great Lakes they love, Wisconsin residents must gain a better understanding of the threats to these natural wonders.

In January 2002, the Joyce Foundation announced plans to invest \$16 million over the next three years to support efforts to protect Great Lakes water resources. As a key component of this investment, the Biodiversity Project initiated an 18-month public education campaign in the region to improve Great Lakes ecological literacy.

During the campaign, the Biodiversity Project will target a few key topics and messages to help close critical gaps in public understanding regarding Great Lakes ecological issues, such as the role that groundwater plays in keeping the lakes healthy. We will first test our public outreach campaign in Wisconsin. Then we hope to incorporate it in a broader campaign across the Great Lakes region.

The goals are ambitious, but the stakes for the Lake are high. After all, unlike beach closings, having Wisconsin residents informed, engaged and active in Great Lakes protection is something you'd expect around here.

Jane Elder is Executive Director of the Biodiversity Project. The Madison-based Biodiversity Project's mission is to advocate for biodiversity by designing and implementing innovative communication strategies that build and motivate a broad constituency to protect biodiversity. She can be reached at (608) 250-9876 or jelder@biodiverse.org.

Wisconsin's Great Lakes
coasts contain unique and
rare natural communities
found nowhere else.

RESTORING COASTAL RESOURCES IN WISCONSIN

Travis Olson

The Great Lakes have been subject to intense human use for the past two centuries. Several restoration efforts underway in Wisconsin address the legacy of industrial pollution and the conversion of natural ecosystems to agricultural and urban uses. The Wisconsin Coastal Management Program (WCMP) – guided by the Wisconsin Coastal Management Council – leads efforts to improve the state's coasts. The program encourages and supports acquisition, planning, education, remediation and ecological restoration initiatives taken by many state and local organizations.

Protecting Wisconsin's Coastal Legacy

Public acquisition permanently protects coastal resources and provides an opportunity to reduce further habitat degradation. It increases access to unique coastal ecosystems and provides future opportunities for resource management and ecological restoration. The WCMP has provided grants to acquire several significant coastal properties.

The Lion's Den Gorge Nature Preserve in Ozaukee County provides access to nearly a mile of the Lake Michigan coast. The preserve now occupies one of the last undeveloped lakeshore parcels between Port Washington and the Illinois state line. The high bluffs and spectacular gorge leading to the lake provide important natural habitats that benefit southeastern Wisconsin.

Ozaukee County will soon restore a wetland on the site using additional WCMP funds.

Critical coastal wetlands on the west shore of Green Bay protect water quality and provide bird and wildlife habitat. The fisheries of Green Bay depend on these wetlands and adjacent streams. As part of a larger effort to restore fisheries and water quality, the Department of Natural Resources (DNR) acquired several Green Bay wetlands and streamside properties with WCMP grants. These acquisitions complement the intensive clean up and restoration of the Fox River and its estuary at Green Bay.

Community Involvement

Coastal communities and residents face special challenges and opportunities due to their proximity to the Great Lakes. The WCMP encourages communities to prepare for their future and actively participate in coastal management through comprehensive planning, education and other coastal conservation activities.

Lake Superior is a point of pride for the City of Bayfield. Community members recently adopted a comprehensive plan to guide the city's future. The plan recommends maintaining the small town character and natural features that attract visitors and residents. It promotes development of an integrated economy with diverse housing opportunities. The plan establishes a framework



that will enable Bayfield to thrive as a place in which to live, work and visit.

The entire Lake Michigan coast receives the attention of an ever-growing number of private conservation organizations. The Lake Michigan Shorelands Alliance – a project of Gathering Waters Conservancy – collaborates with land trusts that develop priorities for land conservation in coastal areas. One of these trusts, the Ozaukee Washington Land Trust, recently joined the DNR and the WCMP to restore Huiras Lake in Ozaukee County.

Restoring Urban Coasts

Our Great Lakes cities boast a long history of economic development that depends on a coastal location. The legacy of this history unfortunately includes intense contamination of land and water from industrial and other urban facilities. The WCMP works in conjunction with several local, state and federal agencies that clean up brownfields and polluted waterways.

The Menomonee River Valley in central Milwaukee will soon begin a large-scale rehabilitation of areas that once served as the industrial heart of the city. Land use planning, innovative designs for stormwater management, development of the Hank Aaron State Trail and the Milwaukee Riverwalk combined with an

historic resources inventory will facilitate private redevelopment and revitalize the city while improving the health of coastal resources.

Restoring Coastal Natural Areas

Wisconsin's Great Lakes coasts contain unique and rare natural communities found nowhere else. However, polluted runoff, encroaching development and the introduction of exotic species of plants and animals threaten the health of these ecosystems.

The Town of Mount Pleasant in Racine County is restoring the Pike River from a channelized drainage ditch to a meandering river with wetlands on its fringes. The restored river will slow the flow of runoff from surrounding developments, reduce the threat of flooding and improve water quality. Key to the health of the river are the restored floodplain wetlands that will filter runoff, hold floodwaters, and become home to native wetland plants and animals.

The DNR, local governments and nonprofit organizations are restoring coastal wetlands in ten State Natural Areas. Invasive plants are being removed from 332 acres of wetlands that have been preserved because of their significant natural and scientific features. Removal of invasive plants, such as common reed and Eurasian buckthorn, helps native plant species that depend on these unique coastal habitats to flourish.



Whether protecting existing natural areas or rescuing degraded industrial waterfronts, many organizations employ restoration as a useful tool in their efforts to manage coastal resources effectively for the benefit of Wisconsin's Great Lakes communities. The complex nature of restoration requires neighbors and diverse organizations to work together to accomplish their mutual objectives. The WCMP continues to support partnerships that tackle the difficult task of restoring our Great Lakes.

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Each Chequamegon Bay estuary is a unique treasure connected by the waters they share.

A STRING OF PEARLS: THE ESTUARIES OF CHEQUAMEGON BAY

Cathy Techtmann

es·tu·ar·y (ĕs'chōō-ĕ r'ē) **noun**

An arm of the sea that extends inland to meet the mouth of a river.¹

Along Lake Superior's southern shore, rivers draining the land flow into the cold blue waters of the world's largest freshwater sea. These places, on the edge of water and soil, have been shaped through time by nature and man. Like their saltwater cousins, the shallow coastal wetlands formed where the waters from the land and inland sea mix and mingle are estuaries².

Like a string of pearls, fresh water estuaries grace the sweeping curve of Lake Superior's Chequamegon Bay. Each estuary is a unique treasure connected by the waters they share.

Just as the Lake shapes these coastal wetlands, the estuaries in turn influence the Lake. In a dynamic relationship the quality of water sent out through the estuaries affects the people, wildlife, plants and even the future of the Lake Superior region. Each has a story to tell that is best shared by the people who cherish and protect them.

A 20-minute video, "*A String of Pearls*," captures the stories of estuaries of Chequamegon Bay. The University of Wisconsin-Extension and Wisconsin Coastal Management Program (WCMP)

produced the video with help from tribal elders, natural resource managers and concerned citizens. Shot on location on Lake Superior, the program takes viewers on a virtual tour of each estuary and allows them to experience their rich diversity – without getting their feet wet! Viewers gain personal insights from the people who manage and care for these resources. From historic photos and on-the-water scenes, they learn about the issues and opportunities concerning protection of the estuaries.

The video is organized into five vignettes featuring the traditional Native American flute music of Frank *Anakwad* Montano. Each vignette reveals a different perspective on how each estuary has shaped the region's culture, history and ecology, and the challenges of preserving them.

- **Kakagon-Bad River Estuary**...protecting the 16,000 acre "Everglades of the North" and what is sacred to the Ojibwe people.
- **Fish Creek Estuary**...discovering how natural events and human activities have made change a constant.
- **Whittlesey Creek Estuary**...restoring a damaged watershed and the native Coaster Brook Trout through a new National Wildlife Refuge.

- **Sioux and Onion River Estuaries...**citizen volunteers taking leadership for preservation and protection through land use planning.
- **Raspberry Bay Estuary...**sustainability through tribal leadership to prevent erosion and preserve water quality for wild rice, fish and traditional uses.

The freshwater estuaries of Chequamegon Bay have experienced many changes. Only now are we beginning to appreciate the function of these unique coastal wetlands and recognize their cultural and biological importance. *“A String of Pearls”* explains how citizens, agencies and tribes work together to preserve these rare treasures. The stories of these estuaries remind us of how much our past and future are linked to the water and how, in turn, they are linked to each other.

The creation of *“A String of Pearls”* builds on a partnership between the WCMP and the University of Wisconsin-Extension through the Northern Great Lakes Visitor Center in Ashland. The video raises the awareness of visitors to the region, citizens, students and local decision-makers of



the importance of Chequamegon Bay’s freshwater estuaries and coastal wetlands. The Northern Great Lakes Visitor Center distributed the video to schools and libraries throughout the Lake Superior region and features it in estuary education programs. It is available in VHS or CD format or via webstreaming at www.uwex.edu/ces/nglvc.

Organizations providing technical expertise in the creation of *“A String of Pearls”* include the Bad River Band of the Lake Superior Chippewa, US Fish and Wildlife Service, Wisconsin Department of Natural Resources, the Inland Sea Society, the Red Cliff Band of the Lake Superior Chippewa and the University of Wisconsin-Superior Videography Department.

Lake Superior’s Chequamegon Bay estuaries shaped the character of the region for centuries. Educational projects such as *“A String of Pearls”* help to ensure that these irreplaceable resources prosper in the decades to follow.



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¹ The American Heritage Dictionary. Second College Edition. Copyright 1982.

² U.S.C. §1453(7) Coastal Zone Management Act of 1972 (as amended 1996).



With over 108
dams removed
in the last
50 years,
Wisconsin leads
the nation in
dam removal.

RIVER RESTORATION THROUGH SELECTIVE DAM REMOVAL IN THE LAKE MICHIGAN BASIN

Helen Sarakinos

Wisconsin has prospered because of the abundance of natural resources contained within the state. Our prosperity has been built on our forest, water and mineral resources. Among these natural treasures are over 44,000 miles of freshwater streams winding through the landscape. Since the mid-1800s, Wisconsinites harnessed the power of these flowing waters to move timber, irrigate crops, operate mills, generate power and accomplish a myriad of other purposes.

Yet progress comes with a price. Over the last 150 years, more than 3,800 dams have been built across Wisconsin rivers. Each dam produced a perceived benefit, but each also contributed to extensive cumulative impacts. Along with polluted runoff, dams constitute one of the greatest threats to rivers in the state. Dams alter the flow of water and prevent the natural movement of sediment in the river channel. They also block fish and mussel passage, limit access to habitat, fragment river ecosystems and impair water quality both in the reservoir and downstream.

Many Dams are Old, Obsolete and Uneconomical

According to the Wisconsin Department of Natural Resources (DNR), there are over 700 permitted dams in Wisconsin's Lake Michigan Basin. While it is difficult to pinpoint the exact age of each dam, recent studies show that of the dams with a documented age, 60 percent are between 50 and 100 years old. Another 10 percent are older than 100 years. The national Association of State Dam Safety Officials states that the engineering life of a typical dam is 50 years. Beyond that age, dams require repair and maintenance to keep them safe and functioning properly. In Wisconsin's Lake Michigan Basin, municipalities or private individuals own 42 percent of the dams. The expensive repairs that aging dams require can place a heavy burden on these owners.

As we face the growing crisis of aging dams in our waters, the River Alliance of Wisconsin is working with multiple partners – including dam owners, municipalities and the DNR – to examine available options. One of those options is selective dam removal. With funding from the Charles Stewart Mott Foundation, the River Alliance initiated a three-year project to examine the

impact of dams at a basin level rather than on a case-by-case basis. We also educate interested dam owners about their financial and legal responsibility to maintain the dam and minimize harm to people and the natural ecosystem.

Not All Dams are Created Equal

Just as some dams provide a greater economic benefit than others, some do more harm to rivers than others. The amount of harm dams may cause varies due to their size, location, proximity to species of concern or their role in exacerbating other river problems (e.g. nutrients, invasive species). The River Alliance's Lake Michigan Basin Project seeks to evaluate the relative impacts of these dams on river ecosystems and determine where to gain maximum restoration benefits through selective dam removal.



Using Both Quantitative Data and Local Expertise to Understand Impacts

The Lake Michigan Basin Project also has as a goal the development of a more inclusive decision-making framework to help dam owners and public administrators decide when dam removal is a desirable option. Using Geographic Information System technology, we can spatially link ecological, engineering and logistical information to existing dams in the Lake Michigan Basin. Such a framework can apply to other regions or eventually statewide.

Some of the variables under consideration include species of concern, commercially valuable fisheries, proximity to headwaters, connectivity and special designations (e.g., Outstanding and Exceptional Resource Waters). Additional factors include dams considered by DNR as priorities for removal (basin reports, fisheries management plans, interviews with field staff) and dams that are neglected or ownerless.

The photos at left illustrate the Franklin Dam in the Sheboygan River.

Top left: photo of the dam.

Top right: photo simulation of the river with the dam removed (courtesy of DNR).

Bottom: actual site 12 months later.

Dam Removal is About People, Not Just Rivers.

While a solid, science-based approach to assessing the impact of dams is a priority, this work fits within a larger social framework. The River Alliance of Wisconsin works cooperatively with dam owners and the public to promote informed decision-making. We encourage consideration of the financial and legal obligations of dam ownership, the ecological impacts of dams and the benefits of selective dam removal. Wisconsin is a national leader in demonstrating how dam removal can be as much a community revitalization opportunity as an effective river restoration tool. Dam removals in Milwaukee, West Bend and Baraboo provide a few of the many examples of how dam removal led to new economic development opportunities and brought people and investment back to the waterfront and river communities.

The River Alliance passionately believes that a healthy river is good for the community and the economy. With over 108 dams removed in the last 50 years, Wisconsin leads the nation in dam removal. Just as natural resource use and extraction built our history, a vibrant and economically stable future relies on protecting our rivers and the recreational and tourist economies that depend on them.

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Each Milwaukee beach has its own unique set of environmental influences.

BEACH MONITORING IN MILWAUKEE

Mary Ellen Bruesch and Sandra McLellan, Ph.D.

The City of Milwaukee Health Department (MHD) has monitored Lake Michigan beaches (Bradford, McKinley and South Shore) in Milwaukee for several decades, testing for *E. coli* or fecal coliform organisms. *E. coli* and fecal coliform bacteria are always present in bird and animal waste, including human waste. The number of *E. coli* in a 100 milliliter (mL) volume of water currently serves as an indicator of the extent of fecal material in the water and the likelihood that pathogens (harmful bacteria, virus and protozoa) might be present in the swimming water sampled.

E. coli levels in natural waters can vary widely from day to day. Because no rapid tests are available to measure the amount of *E. coli* in the water, MHD recently focused efforts on estimating current water quality at Bradford and South Shore beaches through the use of predictive models. These models employ a number of environmental variables – other than *E. coli* – measured at the time a water sample is collected. In the past, MHD used a “Rainfall Model” to predict *E. coli* levels at South Shore Beach. The environmental models currently piloted use rainfall data as well as other measurements to predict water quality.

Based on values of environmental parameters measured at the time of sampling, the models assess current water quality by estimating the levels of *E. coli* in a water sample. Environmental variables measured at Bradford Beach include algae, turbidity, wind vector, recent combined sewer overflows and water temperature. All measurements at Bradford Beach are taken manually at the same time water samples are collected. Measurements at South Shore are obtained by an in-water automated monitoring station that measures pH, conductivity, water temperature, rainfall, wind vector and turbidity. In addition, records of recent combined sewer overflows are plugged into the model.

The results of recent research demonstrate that not all pollution sources contribute the same type or concentration (if at all) of pathogens to swimming waters such as those at Lake Michigan beaches. Each beach has its own unique set of environmental influences and point- and nonpoint-pollution (*E. coli* and pathogen) sources. Sewage effluent – as well as overflows that may enter the rivers and harbors during combined sewer overflows or sewage treatment diversions – is more likely to contain human pathogens than the feces from various types of birds. Certain



types of bird feces, however, can contain human pathogens. A beach impacted by human sewage would be of immediate public health concern. The MHD works with the research community to determine sources of *E. coli* at Milwaukee beaches to provide improved risk assessment and subsequently better health advice to persons using the beaches.

Research Efforts to Determine Sources of *E. coli* Contamination

Investigating sources of fecal pollution is important not only for estimating potential health risk, but also for focusing remediation efforts so major sources of contamination can be minimized. One critical step in determining sources is to characterize spatial distribution. Research into the sources of *E. coli* found that water quality in swimming areas is influenced by both local and regional factors. At one beach site in Milwaukee runoff from the beach area and adjacent parking lot contributed to the degraded water quality. *E. coli* levels at the beach were not necessarily a reflection of overall water quality in Lake Michigan. Local inputs of fecal pollution include urban storm water runoff and roosting waterfowl. Both may deliver high levels of *E. coli* to surface waters.

Algae accumulation – such as the *Cladophora* that washes up on several Lake Michigan beaches – may further confound the problem by offering nutrients and a protected environment that may prolong the survival of *E. coli*. Additionally, algae may attract waterfowl to the shoreline with the food source of invertebrates that are intertwined with the algae. Management strategies that may improve local contamination problems include treating storm water before discharge to the lake, closed garbage receptacles and public education to discourage feeding waterfowl.

River discharges to Lake Michigan influence regional water quality and may simultaneously impact water quality at beach sites. Combined sewage overflows, urban storm water runoff from impervious surfaces, failing infrastructure in sewer systems and upstream inputs from agricultural lands may all contribute to elevated *E. coli* levels in rivers.

Various approaches have been recently developed to distinguish human vs. nonhuman sources of contamination. One methodology evaluates the frequencies of antibiotic resistance traits in *E. coli* isolates in contaminated waters. This approach is based on the hypothesis that *E. coli* strains from humans are exposed to antibiotics, and therefore will more often display the resistance trait than will *E. coli* strains from wildlife, which are not exposed to antibiotics.

One current study in the Milwaukee area combines spatial mapping of contamination with an evaluation of the antibiotic resistance found in sources. This methodology allows researchers to characterize the sources, transport and fate of bacterial contamination in the Milwaukee Harbor. These studies, combined with an assessment of pathogens carried with different sources of contamination, will provide insight into potential health risks of recreational waters.



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Appropriate boating practices can protect Wisconsin's Great Lakes coastal resources.

CLEAN BOATING

Mike Friis

Nearly 45 percent of Wisconsin residents participate in recreational boating.¹ More than 575,000 boats are registered in Wisconsin² (sixth nationally) with one boat per every ten residents (tenth nationally). Water-based recreation along Wisconsin's 1,000 miles of shoreline³ provides enjoyment to the state's population and contributed to the estimated \$4.1 billion⁴ spent by travelers in the state's coastal counties during 2002.

Appropriate boating practices can protect Wisconsin's Great Lakes coastal resources. This article summarizes four areas of best management practice for marina operators and boaters, and discusses recent federal and state action on coastal nonpoint source pollution.

Petroleum Control

Petroleum spilled during fueling or engine servicing can be harmful or even fatal in an aquatic system. A large film of floating fuel reduces light penetration, limits the availability of oxygen and may be toxic to aquatic life.

- Wise fueling practices prevent contamination of water and shore areas.
- When filling a gas tank avoid spilling, topping off or overfilling the tank.
- Wipe up all gasoline and oil spills. Take waste oil to a used oil recycling center.

Sewage

Improper disposal of sewage causes degradation of water quality. Human and pet wastes pose a serious health risk. Water borne diseases from fecal waste may pass directly to water users and aquatic animals. Microorganisms within sewage use oxygen and any effluent discharged to waterways reduces the amount of oxygen available to fish and other forms of aquatic life. The nutrient load in sewage can also promote the growth of unwanted aquatic plants.

- Do not discharge human waste directly into the water.
- If you have an installed toilet, use a sewage pump-out facility to get rid of waste.
- If you own a portable toilet, empty it into a restroom.
- Dispose of pet waste properly by using disposable bags for clean up.

Waste and Trash

Appropriate disposal of solid and fish waste promotes a clean environment. Waterborne trash can be dangerous to both human and animal life. Wastes from fish cleaning may lead to a decrease in dissolved oxygen as discarded entrails decompose in water.

- Leave nothing on the dock to fall into or blow into the water.
- Do not discard fishing line, cigarette butts or other trash overboard.

- Bring back what you take out. It is illegal for any vessel to dump plastic trash anywhere in the navigable waters of the United States.
- Do not toss fish scraps into the water. Use designated containers at fish cleaning stations found at many marinas and boat launches. Otherwise, bag the waste and take it home for disposal.

Boat Cleaning and Maintenance

Cleaning and maintenance is important to keep a boat safe and reliable. Choosing an appropriate cleaning location, products and methods go a long way toward minimizing adverse impacts.

- Avoid using toxic paints and other products. When cleaning a boat, use non-phosphate and biodegradable cleaning products.
- Properly maintain boat engines to prevent leaks and achieve maximum fuel efficiency while running.
- To prevent the spread of exotic species clean all mud, plants and aquatic organisms from the boat, trailer, propeller, live well and anchors before leaving the boat launch.

Wisconsin Meets Federal Mandate for Clean Coastal Waters

In 1990, Congress amended the Coastal Zone Management Act (CZMA) by requiring states with approved coastal management programs to develop a Coastal Nonpoint Pollution Control

Program. The Wisconsin Coastal Management Program (WCMP) and Wisconsin Departments of Natural Resources (DNR) and Agriculture Trade and Consumer Protection (DATCP) assembled a suite of existing authorities and new initiatives that received federal approval in December 2002.

Wisconsin's approved program includes management measures to address nonpoint source pollution from marinas, agriculture, forestry, urban impacts and hydromodification. Wisconsin's Coastal Nonpoint Pollution Control Program provides a framework for cleaner Lakes and ensures Wisconsin will continue to receive full federal funding for several Great Lakes and Clean Water Act programs.

Clean Boating Guide Available to the Public

The WCMP and DNR developed "Shipshape: A guide to reducing pollutants for marinas, boaters and other coastal customers." This booklet helps marina owners and boat operators follow Wisconsin's official best management practices to reduce pollution.



"Shipshape" was originally published in *Natural Resources* magazine and reached an initial audience of over 120,000 readers. The full document continues to be available to boaters and marina operators at <http://www.wnrmag.com/supps/2002/aug02/intro.htm> or by contacting the WCMP at (608) 267-7982 or coastal@doa.state.wi.us.

Wisconsin's waters will continue to be enjoyed by more than a million boaters every year. By practicing clean boating, Wisconsin water enthusiasts will minimize any potential adverse impact from their sport.

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- 1 Wisconsin Statewide Comprehensive Outdoor Recreation Plan (2000-2005), Wisconsin Department of Natural Resources website at <http://www.dnr.state.wi.us/org/land/parks/reports/scorp/2000/>
- 2 Wisconsin Recreation Facts, 2003, Wisconsin Department of Natural Resources website at <http://ua.dnr.state.wi.us/org/water/division/yow/recreation.htm>
- 3 Wisconsin's Great Lakes Shoreline, 2001, Wisconsin State Cartographer's Office website at <http://www.geography.wisc.edu/sco/maps/shoreline.html>
- 4 The Economic Impact of Expenditures by Travelers on Wisconsin 2001, Davidson-Peterson & Associates, as cited by the Wisconsin Department of Tourism.

COASTAL COMMUNITIES: GROWING SMART, TENDING THE PAST

Geoffrey M. Gyrisco, Ph.D.

People seek to live and work in places with high quality urban design and historic buildings.

Donovan Rypkema, nationally known consultant in historic preservation economics, emphasizes that historic preservation is true smart growth. He observes that well-designed, compact communities fully use existing public infrastructure, land and buildings, provide for a mix of uses, offer a variety of housing types, create new jobs and provide choice in transportation.

People seek to live and work in places with high quality urban design and historic buildings. That is the finding of Richard Florida in his provocative best seller, *Rise of the Creative Class*. Mr. Florida shows that in order to win the economic development race communities must attract knowledge workers. And, he argues, artists, teachers, scientists, engineers, technicians, medical professionals and office managers value creativity, individuality, differences and merit. The experiences of several Wisconsin coastal communities support the concepts of Rypkema and Florida.

The historic character of Bayfield draws many culturally oriented tourists. Studies show that these visitors stay longer and spend more than other tourists. Historic preservation in Bayfield began with a survey in the 1970s, followed by a historic preservation

ordinance and a law to preserve the brick streets. Mayor Larry McDonald states, “the key to the continued success of Bayfield and its livability and community satisfaction is historic preservation.”

Climate and location limit Bayfield’s tourism economy: half of its business occurs in 60 days and 90 percent in six months. To provide additional economic base, Chequamegon Bay area leaders created the Alliance for Sustainability to promote high technology education, telecommuting and a technology center. The project and the beauty of the area drew technology entrepreneur Jerry Johnson to invest \$2 million in projects centered in Bayfield. Thus, Chequamegon Bay may find itself on the verge of becoming silicon bay.



Richard Florida identified diversity as a critical ingredient in a community's ability to attract knowledge workers. Business and community leader Einar Tangen takes pride in the diversity and safety of Milwaukee's Third Ward where there is "no tolerance for intolerance." Here steel mill workers, investment bankers, techies and artists mix. This warehouse district – where three rivers meet and enter Lake Michigan – once seemed destined to become the city's red-light district. Business people saw greater potential. They created a Business Improvement District, gained a listing on the National Register of Historic Places and established an historic preservation commission for the district. Talented people working together created a mixed-use community centered on the historic district. In less than ten years, the value of property in the district rose from \$40 million to \$240 million today. Planned projects will raise the value to \$500 million in three years.

Racine has realized much of Rypkema's vision of historic preservation as true smart growth. Its downtown retail and cultural center occupies a late 19th and early 20th century Main Street historic district. A new art museum, the Johnson Building and a planned history museum ensure that this street remains vital. The arts businesses of 6th Street will soon be joined with the conversion of a large factory for artists' live-work lofts. Industry, a charter school and a day care share a historic factory.

Racine is an easily walked city with a bus system centered on a revitalized historic train station. Metra train service may soon connect Racine to Chicago and Milwaukee. The city has agreed not to expand its boundaries and will continue to grow through compact redevelopment.

Ashland's draft comprehensive plan positions the city as a regional center providing services to smaller surrounding communities. The plan calls for compact redevelopment on underused land with little urban expansion, and connects the city's historic downtown with the bluff overlooking Chequamegon Bay. A new historic preservation commission works with the various churches to provide leadership in preserving the community character that makes it attractive to visitors and new residents.

In the Door County Town of Nasewaupee, citizens demanded a unique, creative and detailed plan that would protect the distinctive character of the town in lieu of traditional zoning. They began with a community character inventory. The inventory incorporated photographs of many historic landscapes and building features that give the township a distinctive sense of place. The inventory helped define land use management areas that were assigned goals and policies specifically designed to allow new development and maintain the town's character.



Historic preservation approaches used throughout Wisconsin's coasts vary as much as the communities themselves. However, general principles of historic preservation apply widely. Working together, creative citizens successfully identify their community's historic assets and comprehensively plan for the preservation of historic resources, cultural character and local identity. By maintaining and using their historic heritage, communities can draw in new financial resources and people to create their chosen future.

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2003 WISCONSIN COASTAL MANAGEMENT PROGRAM GRANTS

Editors Note

In 2003, the Wisconsin Coastal Management Program (WCMP) celebrates its twenty-fifth anniversary. Since 1978 the program has focused attention on the intimate association between Wisconsin's people and their two Great Lakes. This edition of the *Wisconsin Great Lakes Chronicle* describes some of the issues and opportunities addressed by the WCMP and its partners. With technical and financial assistance, the program helps local, state and federal organizations – both public and private – improve management of coastal resources, enhance economic opportunities and increase public access to the lakes themselves. During this silver anniversary year, the WCMP provided \$2 million to support the local and coast-wide projects listed below.

Project Name

Grantee

WCMP Award

Project Description

Southern Lake Michigan Region

Citizen Action through Water Quality Education

River Revitalization Foundation

\$20,000

Encourage citizen monitoring and restoration in the Milwaukee River basin to supplement DNR efforts, generate attention to water quality issues and promote ownership of resource.

Community Storm Water Park

Sixteenth Street Community Center

\$120,710

Develop detailed site plans and engineering specifications for a storm water park in Milwaukee's Menomonee Valley that will provide flood detention and storm water treatment.

Delineate Problem Wetlands in the Lake Michigan Basin

Southeastern Wisconsin Regional Planning Commission

\$24,000

Provide information to improve wetland permit decision-making in a region with high development pressure.



Discover Wisconsin TV Episode: Racine County
Racine County Convention & Visitors
\$15,000
Produce a half-hour Discover Wisconsin TV episode spotlighting Racine County and its coastline.

Lakefront Master Plan Update

Racine County & City of Racine
\$28,000
Update the 1983 master plan for Racine Harbor through a unique city-county partnership.

Lion's Den Gorge Nature Preserve Public Access

Ozaukee County
\$100,000
Construct public access improvements to the newly acquired 73-acre Lion's Den Gorge Nature Preserve on the Lake Michigan shoreline.

Lion's Den Gorge Nature Preserve Wetland Restoration

Ozaukee County
\$7,500
Restore a 2.8-acre wetland in the Lion's Den Gorge Nature Preserve connecting to an adjacent US Fish and Wildlife Service (USFWS) waterfowl production area.

Menomonee Valley Cultural Resource Project

Menomonee Valley Partners, Inc.
\$25,000
Compile a Cultural Resource Management Plan for the Menomonee River Valley, develop interpretive signs for the Hank Aaron State Trail and other public sites in the Valley, and publish a map and newsletters.

Milwaukee River Public Access Trail

Milwaukee County Parks Department
\$90,000
Construct a non-paved trail along the eastern side of the Milwaukee River from the former North Avenue Dam.

Technical Assistance

Southeastern Wisconsin Regional Planning Commission
\$20,000
Support local governments and the WCMP in coastal management activities.

Water Quality at South Shore Beach

Milwaukee County Parks Department
\$20,000
Install a trench interceptor and Storm Treat cell (a passive filtration technology) at the South Shore boat ramp to collect and treat storm water runoff from the parking lot.

Water Quality Kiosks

UW Milwaukee
\$84,088
Publicize Milwaukee Estuary water quality monitoring information using accessible interactive educational kiosks and the Internet.

Bay-Lake Region

Coastal Resource Identification for Oconto County

Bay-Lake Regional Planning Commission
\$16,100
Delineate environmental and cultural resources for use by communities and the regional planning commission for comprehensive planning and zoning ordinance development.

Critical Site Identification Using a Geographic Information System (GIS)

Manitowoc County Soil & Water Conservation Department
\$25,000
Delineate and prioritize sites in Manitowoc County to implement nonpoint source pollution control best management practices.

Discover Wisconsin TV Episode: Manitowoc/Two Rivers

Manitowoc Visitor and Convention Bureau/City of Two Rivers
\$15,000
Produce a half-hour Discover Wisconsin TV episode spotlighting Manitowoc, Two Rivers and their Lake Michigan coastline.

Fish Creek Harbor Test Expansion

Town of Gibraltar
\$2,000
Expand the current Fish Creek watershed study to include the harbor of Fish Creek.

Harbor Walkway Project

City of Algoma
\$24,898

Implement Phase I of a plan to link the Crescent Beach Boardwalk to a pedestrian park. Develop marketing and educational brochures for a community walking tour.

Manitowoc County GIS Wetland Restoration Inventory

Manitowoc County
\$23,660

Complete a comprehensive inventory and assessment of small wetland restorations.

Sheboygan County Natural Areas & Critical Resources Plan

Sheboygan County
\$24,673

Develop a Natural Areas and Critical Resources Plan which will guide the county's future comprehensive planning.

Submergent Vegetation Inventory:**Green Bay Cat Islands**

UW-Green Bay
\$8,503

Develop important baseline information for one of the largest habitat restoration projects in the Great Lakes.

Technical Assistance

Bay-Lake Regional Planning Commission
\$20,000

Support local governments and the WCMP in coastal management activities.

Waterfront Land Acquisition

City of Sturgeon Bay
\$326,250

Purchase a parcel along the Bay for a public open space and walkway. The project will provide enhanced cruise ship docking and improved storm water runoff by providing a buffer.

Zoning Ordinance Update

Town of Ahnapee
\$4,054

Implement a recently adopted comprehensive plan by revising the town's zoning ordinance and map to be consistent with the plan.

Lake Superior Region**Ashland County Comprehensive Plan**

Ashland County
\$50,000

Integrate coastal resource planning into the county comprehensive plan and prepare a stand-alone Coastal Resource Management Plan.

Bayfield Playground Improvement Project

City of Bayfield
\$51,098

Rehabilitate the under-utilized East Dock Park playground, make the facilities handicapped accessible and encourage public access to the park.

Discover Wisconsin TV Episode: Bayfield County

Bayfield County Economic Development Corp., Inc.
\$15,000

Produce a half-hour Discover Wisconsin TV episode spotlighting Bayfield County and its coastline.

Lake Superior Birding and Nature Trail

Wisconsin Department of Natural Resources
\$25,000

Develop a Lake Superior Birding and Nature Trail to connect people with nature, promote local tourism efforts and educate people about Wisconsin's Great Lakes resources.

Lake Superior Leadership School Feasibility Study

UW-Extension
(Northern Great Lakes Visitors Center)
\$22,300

Educate citizens to promote leadership in local decision making.

Lost Creek Acquisition

Wisconsin Department of Natural Resources
\$177,000

Purchase coastal riparian parcels along Lost Creek Number Two and Lost Creek Number Three in Bayfield County to protect an ecologically sensitive area and enhance two streams that flow to Siskiwit Bay in Lake Superior.

Red Cliff Marina Modernization Planning Program

Red Cliff Band of Lake Superior Chippewa
\$7,500

Conduct a feasibility analysis for a proposed expansion of the Red Cliff Marina to encourage economic development and improved public access in a growing tourist area.

Storm Water Management Plan Implementation

Town of LaPointe (Madeline Island)
\$61,100

Implement the first phase of a storm water management plan to promote infiltration and protect storm drain inlets and outfalls on Madeline Island.

Technical Assistance

Northwest Regional Planning Commission
\$20,000

Support local governments and the WCMP in coastal management activities.

Town of Bayfield Comprehensive Plan

Town of Bayfield
\$14,000

Develop a comprehensive plan including a separate coastal resource-planning element.

Coastwide Projects

Coastal Wetland Inventory

Wisconsin Department of Natural Resources
\$76,028

Complete updates to the Wisconsin Wetland Inventory for coastal counties.

Land Trust Conservation Planning

Gathering Waters Conservancy
\$41,170

Develop coastal land trusts, focus land acquisition and easement efforts and expand land trust activity in the Lake Superior region.

Information and Knowledge to Restore

Coastal Resources

Wisconsin Department of Natural Resources
\$39,706

Build on a successful pilot project that supports regional coastal management.

Purple Loosetrife Control along

Coastal Waterways

Wisconsin Wetland Association
\$23,610

Fill in information gaps about purple loosetrife populations in coastal counties by building on a successful initiative with widespread popular support and volunteer participation.

Reach the Beach (Supplement to DNR's *Natural Resources Magazine*)

Wisconsin Department of Natural Resources
\$15,586

Educate the public about how beaches form and what role they play in protecting the natural environment in a scientific and fun way.

Technical Assistance to Local Units of Government

Wisconsin Department of Natural Resources
\$324,846

Enhance the local role in wetland protection by supporting implementation and enforcement of local shoreland and wetland ordinances.

Wisconsin Communities and Coasts:

Making the Connection

Biodiversity Project
\$40,000

Produce materials targeted to specific audiences to make the public aware of Great Lakes water issues.

Wisconsin Maritime Trails 2003

Wisconsin Historical Society
\$39,783

Educate the public about maritime related cultural resources along Lakes Michigan and Superior by funding a section of the Wisconsin Maritime Trails initiative that links shipwrecks, lighthouses, historic waterfronts, historic vessels, museums and shore-side historical markers.



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The Wisconsin Coastal Management Program, part of the Wisconsin Department of Administration, was established in 1978 to preserve, protect and manage the resources of the Lake Michigan and Lake Superior coastline for this and future generations.



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