



Dammed If You Do...

Do you know if the water level on your lake is maintained by a man-made structure? Sometimes it is very obvious, but not always. Many of the issues facing waterfront property owners occur on rivers that are dammed to form lakes, sometimes called "flowed waters." They are true reflections of their watershed. Normally when the flow of a stream or river is stopped they fill with sediments and nutrients causing aquatic plants to flourish. There can also be issues with waters being too low or too high, as well as dam safety. Let's take a look at Wisconsin's dammed waters.

There are approximately 3,900 dams in existence in Wisconsin. Since the late 19th century, more than 700 dams have been built, then washed out or removed. Since 1967, another 100 dams have been removed. Almost 60% of the dams in Wisconsin are owned by a company or private individual, 9% by the State, 17% by a municipality such as a township or county, and 14% by other ownership types.

The federal government has jurisdiction over most large dams in Wisconsin that produce hydroelectricity - approximately 5% or nearly 200 dams. The Wisconsin Department of Natural Resources (DNR) regulates the other 95%.

Dams in Wisconsin

Dams have played a central role in the history of Wisconsin. From the early mill dams built in the 1800s to the hydroelectric and recreational dams in the 1900s, dams have been an important factor in the state's industrial development and tourism industry.

The first dam in Wisconsin was built in 1809 to provide power for a sawmill on the Fox River in the Village of DePere. Other dams quickly followed with construction on the Black River in 1819 and on the Wisconsin River in 1831. These early dams were used to provide flowages for transporting goods and powering lumber and grain mills.

The number of dams in Wisconsin increased rapidly in the latter half of the 19th century.

By the beginning of the 1900s, the legislature determined they no longer had the time or the expertise to regulate dams and issue permits, so the responsibility was given to state agencies.

In 1967, the DNR was created, and jurisdiction over dams was handed over to them. Today the DNR deals with permitting for new dam construction, repairs, reconstruction, ownership transfers, water levels, and abandonment. Because many dams in the state have been in place since the late 1800s, a great deal of time must be invested in inspecting aging dams and making sure they comply with current public safety requirements and environmental regulations.

(Continued on page 2)



(Dammed If You Do..., cont.)

Regulation of Dams

Regulation of dams started soon after the construction of the first dams. One of the first regulations recognized the importance of helping fish pass these structures. Other regulations encouraged the construction of mill-powering dams as well as new settlements. The Milldam Act, a part of the Wisconsin Territorial Laws of 1840, No. 48 permitted the flooding of the land of others without acquiring easements for millponds. This was followed by Wisconsin Territorial Laws of 1841, No. 9 which required legislative permission for dams on navigable streams.

Finally, in 1860, the Wisconsin State Supreme Court ruled that the Milldam Act could be overruled if it were not for legal precedent and economic benefits. The court did leave a mechanism for compensation to landowners whose property was flooded.

The great energy stored in the water behind a dam can cause injuries and damage in the event of a dam failure.

Wisconsin Department of Natural Resources Administrative Codes

The following cover dam regulation issues:

- NR 330 Warning Signs and Portages for Dams
- NR 333 Dam Design and Construction
- NR 335 Municipal Dam Grant Program
- NR 336 Dam Removal Grant Program
- NR 353 Wetland Conservation Activities

Today, dams in Wisconsin are regulated primarily under the Public Trust Doctrine. This document states that all rivers, lakes and navigable waterways are under the

jurisdiction of the State of Wisconsin. Any structure which is built on a waterway impacts the public rights to that waterway and needs to be monitored by the State of Wisconsin to assure safety, water quality, public access and minimal impact on Wisconsin wildlife.

Chapter 31 of the Wisconsin State Statutes was created in 1917 under the Water Power Law and covers the regulation of dams and bridges affecting navigable waters. The purpose of Ch. 31 was to ensure that dams were safely built, operated and maintained. The DNR is responsible for administration of these regulations. Chapter 31 covers:

- Dam permitting;
- Dam construction;
- Dam safety, operation and maintenance;
- Alteration or repair of dams;
- Dam transfer and dam removal;

- Water level and flow control; and
- Dam safety inspection.

Dam Definition

A large dam is defined as having a structural height of over 6 feet and impounding 50 acre-feet or more, or having a structural height of 25 feet or more and impounding more than 15 acre-feet. Any dam not meeting this definition is defined as small.

The hazard rating of a dam (high, significant or low) is based on the downstream development that could be affected if it failed and the zoning in place to prevent future development in the hazard area. A high hazard dam is one whose failure or mis-operation will probably cause loss of human life. Dams rated with a significant hazard could cause significant property damage but no loss of life. Typically no loss of life or significant property damage occur as a result of failure from a low hazard dam. Only about 190 state-regulated dams are rated as "high hazard" and approximately 110 are significant hazard dams. The rest of the large dams and the majority of the small dams are low hazard.

Information for Dam Owners and the Public

Dam ownership carries significant legal responsibility. The general rule is that a dam owner is responsible for its safety. Liability can be imposed upon a dam owner for failure to maintain, repair or operate the dam in a safe and proper manner. State law requires a permit to construct, repair, and/or operate a dam. Additional state or federal regulations for operation may apply if the dam is located on a navigable stream.

Dams create risk. The great energy stored in the water behind a dam can cause injuries and damage in the event of a dam failure. In addition, dams can be hazardous to unwary boaters or adventurous children who may try to go on, over or through the dam.

Lake Districts and Dams

Thirty-two lake districts are listed as owners of dams in the state. Many of these groups took over from owners who could no longer



maintain the dams, or because the dam had been abandoned and needed a new, responsible owner.

Over 50% of the dams in the state are owned by private individuals. Over time, some private dam owners no longer want the sole responsibility for their dam, especially when there are numerous other property owners on the impoundment. When the owner of a dam no longer wants to own a dam they have two choices: 1) transfer the dam to a new owner, or 2) apply to abandon the permit for the dam and remove the dam from the stream.

When a dam or the property containing a dam is sold, the DNR must approve the sale. The goal of this regulation is to assure the dam will be transferred to a responsible owner who is able to properly operate and maintain the dam. The process includes identifying any problems with the dam so that both the buyer and seller are aware of any repairs that need to be factored into the transaction. The DNR also requires proof of the new owner's financial stability to assure the dam will be maintained for a minimum of 10 years.

Lake districts can prove to be successful dam owners if there are enough lake property owners willing to share the cost. By their nature, lake districts are interested in activities that maintain and improve the quality of their lake. Safe operation and maintenance of a dam is a good way to assure the future of the lake.

Recent Statutory Changes

The flooding events of 2007 and 2008 in Southern Wisconsin brought many dam issues into the news. Subsequently, two statutory changes were made to Chapter 31 in July 2009:

- providing more funding to address safety deficiencies at dams, and
- strengthening the large dam inspection process.

This funding added up to \$4 million in the 2009-2011 Biennial Budget Bill. The Municipal Dam Grant Program (ch. NR 335, Wis. Admin. Code) awarded nearly the full amount to address safety deficiencies by repairing, reconstructing, or removing dams. The Dam Removal Grant Program (ch. NR

336, Wis. Admin. Code) is dedicating \$500,000 to remove 10 dams across the state.

Dam inspection is a critical piece of a dam safety program. The mandatory inspection program for large dams was instituted in the mid 1980s and required the inspection of every large dam once every 10 years by DNR engineers. However, this inspection requirement is too infrequent for dams that pose a threat to life or property. In addition, the current staffing level was not able to meet the 10-year inspection frequency for low hazard dams.

The new dam inspection program requires dam owners to hire professional engineers, with experience in dams, to inspect their dams once every two to ten years, depending on the hazard rating of their dams. DNR Water Management Engineers will continue to periodically inspect the dams with the greatest hazard potential, and work with all dam owners to assure they address safety deficiencies identified during inspections.

Conclusion

Dams have had an important role in Wisconsin's economic growth. Today, dams play a variety of roles including power production, flood control and recreation. All dams present a hazard to surrounding and downstream properties. However, with appropriate construction, maintenance and operation, any dam can be an asset to its owners, neighbors and lake visitors. 💧

*By Meg Galloway, Section Chief
Dams and Floodplain Section, DNR*

For more information about the DNR Dam Safety program including the Municipal Dam Grant Program, the Dam Removal Grant Program and the new Dam Inspection Program go to <http://dnr.wi.gov/org/water/wm/dsfm/dams/> or email dnrdamsafety@wisconsin.gov.

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R. Korth



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A Blueprint for Success

Ten Themes of Shoreland Rehabilitation

When you informally survey Wisconsin lake residents, you hear that one of the biggest reasons they live where they do is for wildlife encounters. It is about seeing eagles and ospreys diving for fish, furry friends like otters and muskrats playing along the shoreline, a ruby throated hummingbird buzzing around columbine, or the ringing of chorus frog sounds in the nighttime air. And to increase these chance meetings with critters, shoreline property owners are returning their shorelines to a natural state.

R. Korth



This shoreline demonstrates a nice balance between lake access and a natural buffer of native plants, shrubs and trees.

Shoreland rehabilitation projects come in all shapes and sizes, from minimal efforts that let the shore restore naturally to more sophisticated treatments that involve significant planning and installation of plant material. Whether you employ natural recoveries (“no-mow zones”) or more accelerated actions (“planted buffers”), there are some important ideas to keep in mind to restore your shore effectively.

Shoreland restoration can be easy and doesn’t have to require a lot of investment of money or time – as long as you are patient.

You also don’t need to be a landscape architect to design and install a successful shoreland rehabilitation project, but there are some tried

and true ways to enhance wildlife habitat and improve water quality. This “blueprint for success” involves ten common themes.

1 Partnerships get projects done. Involving the lake community is important. Leaning on your lake community neighbors, area natural resource professionals, local businesses, conservation and youth groups, and others can make for fun and interesting collaborations.

2 Funding for the work can take many forms. Expenses related to shoreline rehabilitation work vary from individual landowners to county cost-share support to DNR grant assistance. It can even involve lake organization coffers or lakeshore makeover contests sponsored by landscaping companies.

3 Plans make a difference. Creating a shoreland plan for your site proves to be extremely useful. Include elements such as: site preparation needs, permit applications, design ideas for your view corridor and access points along the shore, maps of existing vegetation and planting zones for those areas you want to enhance, locations of structures, septic systems, docks, recreational spots, and storage, etc. Thinking through all the ways you want to use your shoreland area and integrating those goals into your plan is a valuable exercise.

4 Ecological design principles enhance shorelands. Investigate intact reference areas on your lake for a vision of what your ultimate shoreline rehabilitation may look like. Include eco-friendly design elements like surface water control measures (e.g. rain and butterfly gardens, rain barrels, gutters, and porous pathways), native plantings for specific wildlife, revegetation of all three tiers of structure (trees, shrubs, and the ground layer), minimization of impervious areas, and low-input landscaping.



5 Landowners are indispensable partners. Participation from property owners is key. Working to address the shoreland area concerns of landowners makes for sound projects in the end.

Landowners' commitment, dedication, and love for their lake are the most important ingredients in shoreland rehabilitation.

6 Maintenance is required. Long-term maintenance and care are important to establish effective projects. Having a plan for watering after installation or during periods of extended drought is essential. Monitoring for invasive species is also a big concern. Protecting your shoreland project investment from browsers like deer and rabbit by using temporary fencing, repellents, and other techniques is beneficial.

7 Erosion control concerns are met. Landowners often rehabilitate their shore because of erosion concerns like slumping banks, bare/exposed soil, or down-slope surface water flow. Incorporating solutions to on-site erosion control problems is a part of any worthwhile shoreland rehabilitation project.

8 Communication is essential. Media can be your ally. Share the positive impacts of your shoreland project with local newspapers or radio, lake organization newsletters and/or web sites, elected officials, chambers of commerce, or resorts. Use signs to explain the shoreland work you completed to encourage and inform people on your lake who might be interested in completing a similar project.

9 Use work horse species. Identifying which native plants do well for your specific climate and soil conditions is vital. Choose proven 'work horse species' that spread quickly, tolerate dry to wet settings, are native to the area, and are utilized by a variety of wildlife.



Share your restoration progress and success!

10 Follow an adaptive approach for success. We need to continually use new science and research findings to produce functional shoreland rehabilitation projects. For example, the trends highlighted in the recent National Lakes Assessment underscore the importance of our near-shore areas. Updates to NR 115, Wisconsin's Shoreland Protection Program, also provide opportunities for increased shoreland rehabilitation around the state. We need to stay nimble to be able to adapt to these kinds of changes in order to promote first-rate shoreland work.

Fortunately there is assistance available for the do-it-yourselfers. The DNR, UWEX Lakes and some counties offer manuals, plant lists, and other how-to guidance in print or on their web sites. To help you get started, check out http://www.uwsp.edu/cnr/uwexlakes/ecology/shorelands/background_information.asp. To get a holistic overview of what's involved, view the video link for "Shoreland restoration: a growing solution" at <http://www.extension.umn.edu/Shoreland/videos/Restoration.html>.

Interactions with wildlife along our shorelands are part of the unique quality of life here in Wisconsin. By rehabilitating these shoreland buffers, we are enhancing wildlife habitat and maintaining water quality. Thus, we are ensuring happy sunrises and sunsets filled with wildlife experiences that connect us to the natural world for today and into the future.💧

*By Patrick Goggin, UWEX Lakes
and Carroll Schaal, Wisconsin DNR*

Shoreland restoration can be easy and doesn't have to require a lot of investment of money or time – as long as you are patient.



Land Use and Wetlands

Wetlands play a key role in the health of waterways throughout Wisconsin. They filter phosphorous, nitrogen and sediment that would otherwise enter our lakes, rivers and streams. They minimize flood damages by storing and slowly releasing rain and snow melt. They provide critical habitat for fish and wildlife. But perhaps most importantly, they protect the quality of life that attracts so many Wisconsin residents and visitors to the water's edge.

Nearly half of Wisconsin's original wetland acreage has been destroyed.

In spite of the various benefits wetlands provide, they have historically been treated as wastelands and were drained and filled to make way for farms, cities, roads and factories. Nearly half of Wisconsin's original wetland acreage has been destroyed. A large portion of our 5.3 million remaining acres are altered and degraded.

Though federal and state wetland laws have slowed wetland loss, many of our wetlands remain threatened from urban, suburban and rural development pressures and other land use activities. Fortunately, much can be done at the local level to reduce these threats.

In Wisconsin, local governments are delegated the primary responsibility of controlling land use and land development. If committed to doing so, local land use decision makers can use tools such as comprehensive planning, zoning, and subdivision regulations, to safeguard the health of wetlands.

Unfortunately, the understanding of wetlands varies widely among local land use officials, as does support for wetland protection and restoration. This can lead to land use decisions being made without full and accurate consideration of the public benefits of wetlands. Misunderstandings about the requirements of state and federal wetland protection laws can also ignite public controversies and fuel wetland regulatory tensions.

To address these concerns, the Wisconsin Wetlands Association developed and released *Land Use and Wetlands: A Local Decision Makers Guide to Wetland Conservation (Guide)*. The purpose of the publication is to improve wetland protection and reduce wetland controversies by providing town, village, city and county land use officials with basic information about wetlands, wetland laws, and practical steps they can take to improve wetland protection and restoration.

The *Guide* aims to help local leaders understand how wetlands contribute to the economic health, public safety, and quality of life in Wisconsin's communities. For example, it describes how wetlands reduce the need for expensive infrastructure by providing natural flood storage and helping to improve water quality in lakes, rivers, and streams.

To improve local decision makers' understanding of wetland regulations and how wetland permit decisions are made, the *Guide* provides a concise overview of the state and federal wetland permit process.

Using a question and answer format, this section also provides clarification on the most frequently misunderstood aspects of wetland protection laws.

In response to the problems many decision makers have understanding what wetlands look like and where they are, the



Wetland clues can include Joe-Pye weed, damp soil or water lines on trees.



Guide includes pictures of Wisconsin's 12 wetland plant communities and a description of the wetland identification tools recently developed by the Wisconsin Department of Natural Resources.

Finally, the publication lists practical steps that local governments can take to improve consideration of wetlands and wetland laws in land use decision-making.

Wisconsin Wetlands Association has distributed the *Guide* extensively to land use officials across Wisconsin, however, much more communication is needed about wetlands and land use concerns. Though written for a local decision-maker audience, the *Guide* was also produced in response to feedback from Northern Wisconsin lake leaders who expressed a need for wetland educational materials to share with local officials. Suggestions for how lake leaders and watershed organizations can use the *Guide* to facilitate discussions about the benefits of protecting wetlands in your community include:

1. Distribute copies of the *Guide* to members of local boards of supervisors and planning, zoning, and land conservation committees.
2. Meet with land use officials to present and discuss the content of the *Guide*.
3. Use the *Guide* to develop talking points about wetland issues for presentation at public hearings and meetings.

Protecting and restoring wetlands will also help to preserve and restore the health of Wisconsin's lakes, rivers, and streams. While the Wisconsin Wetlands Association will continue to work to improve local land use decision-makers' understanding of wetlands and support for wetland protection, we hope to do so in collaboration with lake organizations, watershed groups, and waterfront landowners. Please help us improve the protection of wetlands in your community by taking action on one or all of the above recommendations.

*By Kyle Magyera, Policy Specialist
Wisconsin Wetlands Association*

Land Use and Wetlands: A Local Decision Makers' Guide to Wetland Conservation can be viewed or downloaded for free from Wisconsin Wetlands Association's new local government outreach web-pages at: www.wisconsinwetlands.org/localgovs.htm. Print copies can also be requested by contacting Kyle Magyera, Policy Specialist, at 608.250.9971 or kyle.magyera@wisconsinwetlands.org.

Wetlands reduce the need for expensive infrastructure by providing natural flood storage and helping to improve water quality in lakes, rivers, and streams.

Q&A Lake Districts

Q: Do lake districts need to perform an audit?

A: Yes. The Lake District Board of Commissioners is required to have an audit of the district's financial transactions prepared at the close of each fiscal year. The audit must be submitted and presented at the annual meeting. The law does not specify any further requirements for an audit. Most districts have audits performed by an accounting firm or by an internal committee. In addition, the statutes do not specify the date a lake district's budget should start. Most lake district budgets operate on the calendar year.

For more information on lake districts, see *People of the Lakes: A Guide for Wisconsin Lake Organizations*, www.uwsp.edu/cnr/uwexlakes/districts.

We often get phone calls and e-mails from Lake Tides readers with a variety of questions about lake districts. Do you have a question about lake districts that you would like to see answered in Lake Tides? Send it to uwexlakes@uwsp.edu so we can include it in a future issue.

A. Kowalski



The Belted Kingfisher: Loud and Proud

The warm, vibrant colors of summer stand out drastically on the Wisconsin landscape, especially after the stark black and white hues of winter. While our eyes are immersed into the multi-colors of the season, songs fill the air and create a wildlife sound track. A day fishing on the river or lake can turn that volume up a few notches by being in the presence of a bird known as the Belted Kingfisher. Though the kingfisher can be boisterous, a solitary life is what it craves most.

The Belted Kingfisher is a common North American bird known to plunge headfirst into water to get its next meal of fish.

This exceptional bird is usually blue and medium-sized, commonly seen near rivers, brooks, ponds, lakes, and other water habitats. Both male and female birds have similar characteristics: a round-shaped body with a slate blue breast band between its large head and white belly, followed by a short tail, legs and feet. The bright rufous, or rust-colored, flanks and band across the chest of the female, compared to the male, is interestingly unique. This bird species is one of the few in which the female bird is more vibrantly colored than the male.

The Belted Kingfisher is a common North American bird known to plunge headfirst into water to get its next meal of fish. Its loud cry rattles above before striking its prey swiftly below with its dagger-like bill. Consuming fish and other aquatic invertebrates, the kingfisher is an intense diver of the bird species. By perching on a nearby tree, the kingfisher is able to easily scan for fish near the surface, because its eyes contain a red oil which filters the glare of the water.

Though the belted kingfisher is mostly a solitary creature, mating and breeding is an essential part of its life cycle. The breeding season is a joint effort by both parents, creating their territory along a streambed with vegetation, making a three- to seven-foot nesting site. The nest is burrowed deep in a dirt bank near the water with a tunnel sloping upward to keep water from entering the nest. Many kingfishers have limited areas of desired nesting territories. Humans actually help expand breeding ranges by building roads and digging gravel pits which the birds then utilize as their nesting sites. At least six to seven eggs are birthed in the nest, and 24 hours of incubation are required for the newborn babies to survive. Both the mother and father feed regurgitated food to their young. Though Belted Kingfishers are considered mostly non-aggressive and solitary, protecting their young is of vital importance to them, as it is to most animals. Their typically non-aggressive



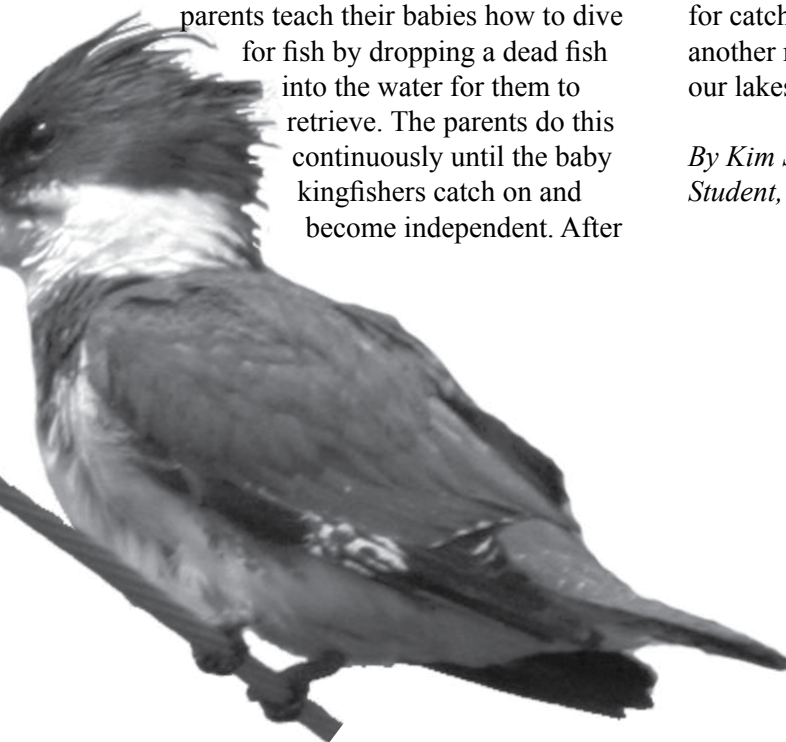
behavior can become hostile when they are most vulnerable.

The newborn birds quickly learn the tricks of the trade of an adult kingfisher diver. The parents teach their babies how to dive for fish by dropping a dead fish into the water for them to retrieve. The parents do this continuously until the baby kingfishers catch on and become independent. After

this bird is proud and introverted, behind its many layers of feathers the kingfisher is an animal vulnerable to habitat destruction. The kingfisher's reliance on uneroded shorelines for digging burrows and high-clarity waters for catching food provides us with yet another reason to help preserve and protect our lakes and rivers. 💧

*By Kim Shankland
Student, UW-Stevens Point*

*Its harsh, rattling cry
is a distinct hallmark
of life on many of
Wisconsin's waters.*



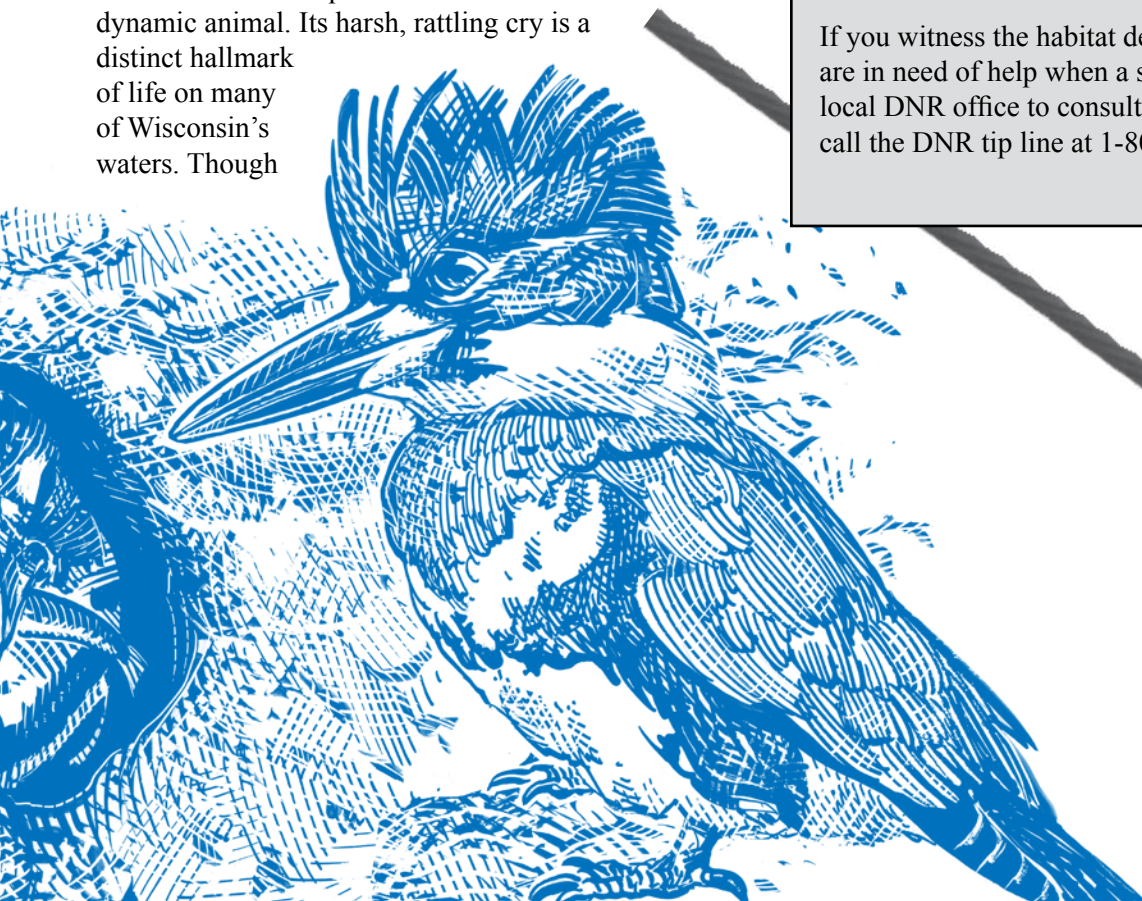
the babies are successful, the parents separate themselves from their babies and each other, and once again become solitary birds.

The kingfisher is a bird with many unique characteristics and qualities that make it a dynamic animal. Its harsh, rattling cry is a distinct hallmark of life on many of Wisconsin's waters. Though

Devastating Habitat Destruction in Canada

Recently, Belted Kingfisher and Bank Swallow nesting sites were damaged near the Kawartha Lakes area in Ontario, Canada. Both species breed and make their homes in shoreline banks, and it was a birdwatchers dream to witness the colonies of birds breeding in a large sand bank by these lakes. That dream was turned into a nightmare when observers witnessed an unaware machine operator moving the earth, bushes, and trees to clear part of the sand bank. Countless birds flew out in all directions, while many of the nests were collapsed under the weight of the moving sand. One woman tried to rescue a few of the baby birds by taking them home and putting them into a straw-lined box. She asked a local naturalist to consult her on taking care of the birds, but was advised to never take the birds away from their home since the parent birds may return to look for their babies.

If you witness the habitat destruction of a breeding colony or are in need of help when a similar situation arises, contact your local DNR office to consult with a DNR Wildlife Biologist, or call the DNR tip line at 1-800-TIP-WDNR or 1-800-847-9367.



T. Lyden



Long-term Lake-level Monitoring in Wisconsin

This summer (2010), the US Geological Survey embarked on a pilot project to establish a long-term monitoring network of seepage lakes located in major regions of Wisconsin. The goals of the project, which is being partially funded by the DNR through the Citizen Lake Monitoring Network (CLMN), are to track regional changes in climate and hydrology, provide indications of climatic change, and provide a framework and protocols for facilitating lake-level monitoring by citizen volunteers throughout the state.

Sadly, there is no consistent long-term lake-level monitoring network in Wisconsin. Many drainage lakes and impoundments are monitored and have long records of continuous data, but these records are not as useful for evaluating natural changes in water levels because drainage lakes have outlet streams that can moderate extreme levels. Seepage lakes, which lack an outlet stream, exhibit large fluctuations in stage because water-level extremes are caused by the cumulative effect of climatic factors over years or decades. These factors make seepage lakes ideal for long-term lake water-level monitoring.

Approach

A core of 10 lakes was chosen from a list of candidate seepage lakes relatively unaffected by human manipulation (Figure 1). Many of these lakes were proposed because they were monitored in the past and have relatively long periods of record. Additional secondary criteria, such as a previous hydrologic study, water quality data, and active volunteer involvement, among other criteria, were also considered.

All lake monitoring sites that are part of this long-term monitoring network will be referenced to a surveyed datum twice each year by USGS staff. Water levels for these lakes will be read during open water by a local observer at about a weekly interval. USGS personnel will measure stages 2-4 times annually on an opportunistic basis when they are working near the vicinity of the lake. All lake level observations will be uploaded to the USGS website for public access. In addition, a method will be developed to link this information between the USGS and DNR websites. As a future option, a subset of the lakes could be monitored with continuous recorders and the real-time data presented on the USGS web site to provide access to current conditions.



R. Korth

Seepage lakes have no outlet stream, making them ideal subjects for long-term water-level monitoring.

Lake water-level fluctuations are important to lake and water managers, lakeshore property owners, developers, and lake users. Lake levels change from year to year, and extreme high or low levels can present problems by restricting access to water and hampering navigation, flooding lakeshore property and damaging shorelines and structures, and changing near-shore vegetation. In addition, decadal scale weather cycles and human-induced climate change are forces that occur over large areas and longer periods of time, but vary locally according to geology, topography, type of water body, and human use. To respond appropriately, we need to understand why and how lake levels are changing.



In the future, data from other lakes that may be experiencing unusually high or low water levels may be compared with data from these index lakes to discern if high or low water levels are caused by natural or human activity in the vicinity of the lake. Moreover, it is hoped that this long-term lake-level monitoring network will provide a framework and protocols for guiding the CLMN program in monitoring water levels in additional lakes throughout the state. 💧

For more information, please contact
Paul Juckem, USGS hydrologist, or
Tim Asplund, WDNR Statewide Limnologist

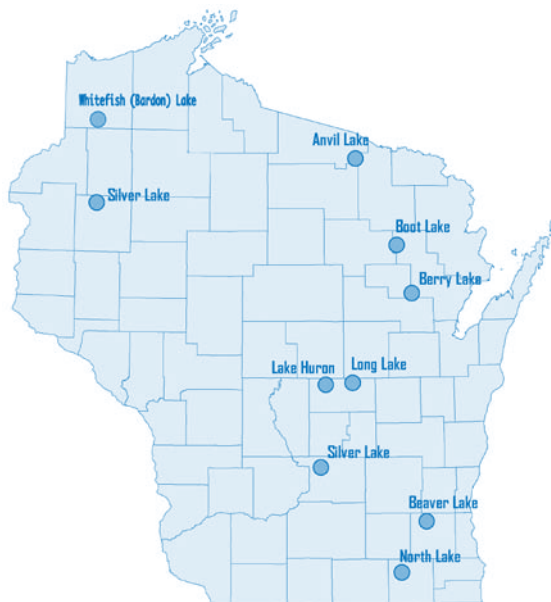


Figure 1. Index lakes that make up the USGS long-term lake water-level monitoring network.

Harmful Algal Blooms - Synopsis of 2009

Beginning in 2008, Wisconsin joined ten other states who received funding from the Centers for Disease Control and Prevention to expand surveillance of harmful algal blooms (HABs) and their associated adverse human and animal health effects. This new effort includes a standardized national data entry system and additional outreach to the public. During the summer and fall of 2009 the Wisconsin Department of Health Services received a total of 35 HAB-related health complaints. In addition to these 35 human health complaints, there were also at least two canine deaths resulting from exposure to harmful algal blooms.

These health events were widely distributed across the state and the symptoms reported fell into four general categories: dermal rashes, gastrointestinal distress, respiratory complaints and flu-like illness. The cases can be broadly divided into two routes of exposure: the first group being comprised of individuals who swam or otherwise recreated in water experiencing an algal bloom; the second group included individuals who had no direct contact with affected waters and had symptoms more consistent with non-specific flu-like illness; some experienced acute respiratory distress.

In the late summer of 2009, there were a number of significant algal mats on Tainter Lake and Lake Menomin, two highly-eutrophic lakes in Dunn County. As these mats began to decompose, they emitted a strong manure-like odor. In the first three weeks of September, many local residents complained of odor-related health problems such as flu-like illness, respiratory distress and gastrointestinal distress. In almost all cases, there were no reports of direct contact with either of the lakes.

<i>Case Reported By</i>	<i># of Cases</i>
Private Citizen	32
Wisconsin Poison Center	2
Health Care Provider	1

<i>Geographic Distribution</i>	<i># of Cases</i>
Adams County	4
Burnett County	1 (canine)
Dane County	4
Dunn County	17
Oneida County	1 (canine)
Racine County	1
Winnebago County	2

<i>Toxin</i>	<i>Found in the following water body</i>
Microcystin-LR	Lake Kegonsa, Lake Mendota Petenwell Flowage, Lake Menomin
Microcystin-LA	Tainter Lake, Petenwell Flowage Lake Menomin
Microcystin-YR	Petenwell Flowage
Anatoxin-A	Tainter Lake, Lake Kegonsa Lake Mendota



For more information
or to report a case, visit:
www.dhs.wisconsin.gov/eh/bluegreenalgae
or call 608-266-1120.



New Faces Fighting AIS

This spring Wisconsin welcomed several new staff members to the statewide campaign against aquatic invasive species (AIS). They have all thrown themselves into the frenetic summer field season and we had to traverse the state to track them down, but here are some brief introductions. If you see these smiling faces out at a lake or landing this summer, take a moment to stop and say hello!



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What is your role in Wisconsin's campaign to prevent and control aquatic invasive species?

Bob: As the statewide AIS Coordinator, I am responsible for making sure the program is working effectively, efficiently and enthusiastically to prevent the introduction and spread of AIS in Wisconsin.

Mindy: I hope to continue the excellent work that Julia Solomon did in this position—facilitating communication between the many partners across the state who work to prevent the spread of AIS, and making sure that they have access to the resources and knowledge that they need.

Carol: Educate the public on how invaders spread, how to prevent their spread, and how to manage a waterbody containing AIS. I also monitor/sample/survey lakes to maintain current records of all species, native and exotic, in northern WI lakes.

What are you most enjoying or looking forward to about your new job?

Bob: I am very impressed with the people working on this issue, the phenomenal variety of water resources in the state and the diversity and complexity of the challenges that this program is faced with. I enjoy listening to the passion people in Wisconsin have when speaking about their lake—there is nothing they can't accomplish. Yes, there is pressure to keep new species out of the state and to prevent the spread of existing species, but there isn't any other place I would rather face this challenge.

Mindy: I've lived in Wisconsin for a total of about 2 weeks now so I have a lot to learn about the ecosystems and people. I'm really excited to get out in the field to start discovering more about Wisconsin.

Carol: Field work! Seeing first-hand how species interact in a lake ecosystem is so rewarding. Also, seeing how enthusiastic and passionate riparian owners are about protecting the lakes. They want to be involved and that is so rewarding.



Care to share one of your goals for your position?

Bob: One of my goals is to increase the amount of AIS monitoring that is being done in the state. The volunteers that are actively monitoring lakes, rivers and wetlands for AIS bear a tremendous amount of responsibility. I'd like to show the citizens in Wisconsin that the Department of Natural Resources is searching for AIS just as hard as they are, and that we are in a position to respond to new invasives quickly and effectively.

Mindy: Everyone has a role to play in biosecurity. Right now there is a high level of support for taking steps to stop the spread of invasive species among boaters, fishermen and residents who enjoy living close to lakes. One of my goals is evaluating the role of pathways such as water gardens and the pet trade in moving invasive species as well as broadening the base of supporters.

Carol: Being in the unique position representing both DNR and the University, I hope to bring together research methods, data and outreach opportunities from both entities in order to bridge gaps within these fields to develop more efficient methods, more complete data sets and better overall knowledge of northern lakes and what they have to offer.

Tell us about your professional background and what led you to this point.

Bob: My academic training is in limnology. While I was in graduate school at UW-Milwaukee, Jeff Bode hired me to start working for the DNR as a limited term employee, and when I finished my graduate degree in 1985 I started full-time work as a Water Resource Manager for the DNR. Since then I have also served as the Southeast Region Lakes Specialist and an Aquatic Habitat Coordinator. Funny how things come back to you—more than 25 years later I am once again working with Jeff Bode and a marvelous group of people, places and challenges.

Mindy: I have been the Invasive Species Coordinator for the State of Hawaii for the past 8 years. I've loved working in the field of invasive species and am really happy to be joining the network here.

Carol: My whole life has been on water; from growing up on a beautiful WI lake, to spending five years sailing around the world with the U.S. Navy, to sampling lakes with UW Center for Limnology for three years, and now with UW Trout Lake Station and WI DNR. I always felt I may have been a fish in a past life; I've always loved being in and around water.

You've got a free day to spend on the water. Where do you go and what do you do?

Bob: To the lake of course! I am very lucky to own waterfront property on a small lake in Manitowoc County and I frequently head to the lake to fish, camp or swim. The solitude, and aesthetic quality are a high personal priority for me and "my" little lake gives me what I'm looking for.

Mindy: Paddle! I sold or adopted out my surf skis, surf board and kayaks before moving away from the islands and I can't wait to find their replacements and learn how to paddle a canoe. My husband and I are looking forward to exploring the waterways and camping along the way.

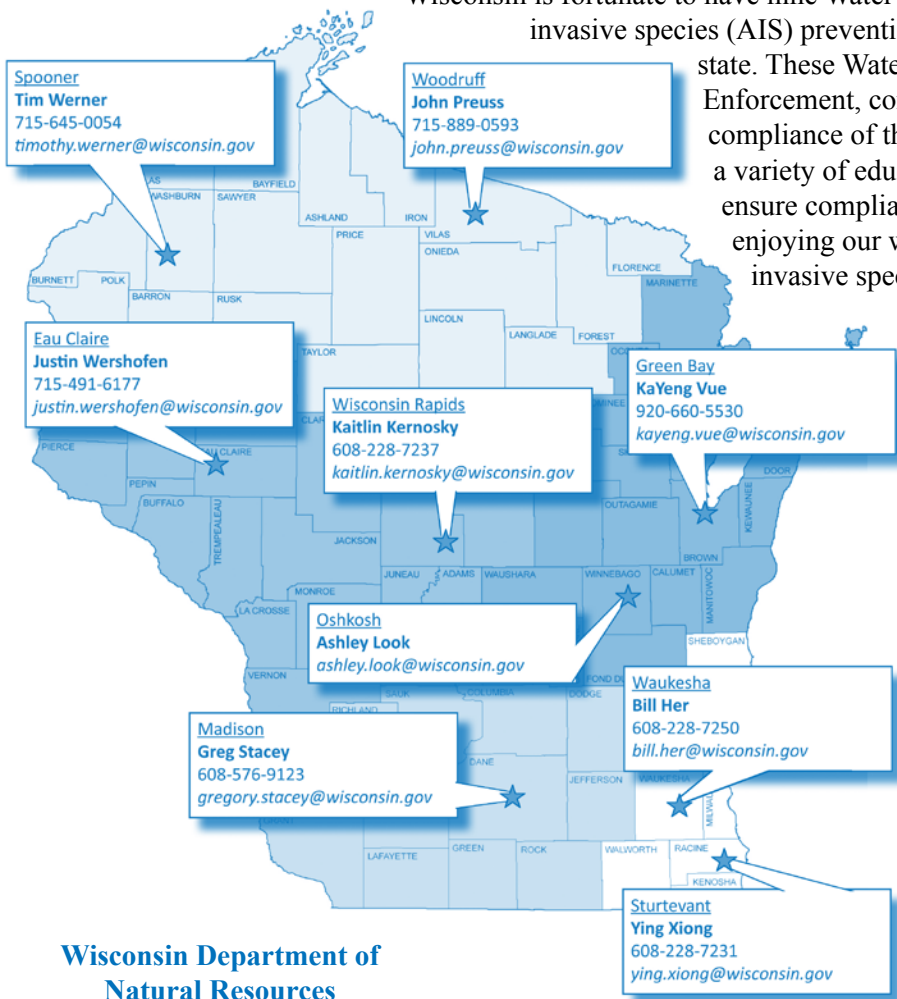
Carol: The place - Wisconsin's Northwoods. It holds some of the clearest lakes and most beautiful landscape. I'd take advantage of a few select lakes to swim, fish and be merry (not necessarily in that order).



Water Guards

Encourage Regulation Compliance

Wisconsin is fortunate to have nine Water Guards on board this summer to support aquatic invasive species (AIS) prevention efforts and enforce AIS regulations across the state. These Water Guards, who are a part of DNR's Bureau of Law Enforcement, conduct watercraft inspections at boat landings and compliance of the state's new AIS laws. While they're involved in a variety of educational events, their main focus this summer is to ensure compliance of AIS regulations among boaters and anglers enjoying our waters. Help do your part to prevent the spread of invasive species by following these steps:



**Wisconsin Department of
Natural Resources
Water Guards by DNR Region
2010**

- ✓ **INSPECT** your boat, trailer, and equipment and
- ✓ **REMOVE** any attached aquatic plants or animals (before launching, after loading, and before transporting on a public highway).
- ✓ **DRAIN** all water from boats, motors and all equipment.
- ✓ **DON'T MOVE** live fish away from a waterbody.
- ✓ **DISPOSE** of unwanted bait in the trash.
- ✓ **BUY** minnows from a Wisconsin bait dealer. Use leftover minnows only under certain conditions*.

*You may take leftover minnows away from any state water and use them again on that same water. You may use leftover minnows on other waters only if no lake or river water or other fish were added to their container.

Wondering who the Water Guard is for your neck of the woods? Check out the map for office locations and contact information, or go to www.uwsp.edu/cnr/uwexlakes/cbcw.

2010 Invader Crusaders

Congratulations to this year's "Invader Crusader" award recipients! The Wisconsin Governor's Council on Invasive Species celebrated the volunteer and professional efforts of these individuals and groups:

Student Research – Alycia Crall

Volunteer Individual – Ron Richter

Volunteer Pair – Lawanda Jungwirth & Audrey Ruedinger

Volunteer Group – Transportation & Utility Rights-of-Way Best Management Practices Advisory Committee

Professional Individual – Diane Schauer

Professional Individual Business – Connie Ramthun

Professional Individual DNR – Peter Flaherty

Professional Organization – Northern Great Lakes Visitor Center



To read more about these award recipients, go to <http://invasivespecies.wi.gov> and click on "Awards."



Speaking for Lakes

Save the Date!

April 12-14, 2011
(Tuesday - Thursday)
Green Bay, Wisconsin

There are amazing stewardship efforts occurring on our Wisconsin lakes every day. But are those who make decisions about our lakes' future aware of these labors?

This state-wide convention is a time to strengthen existing partnerships and build new relationships with lake groups, citizen advocates, state agencies, elected officials, and service providers.

By incorporating new technology, effective methods of communication, basic lake ecology and important lake research, this gathering will give lake lovers the tools to "speak for their lakes"!

Look for detailed information this fall at

www.uwsp.edu/cnr/uwexlakes/conventions

C A L E N D A R

September 18, 2010 – World Water Monitoring Day

This international education and outreach program helps build public awareness and involvement in protecting water resources around the world by engaging citizens to conduct basic monitoring of their local water bodies. Celebrate with us on September 18, or host your own World Water Monitoring Day anytime from March 22 until December 31, 2010!

For more information: <http://www.worldwatermonitoringday.org/index.html>.

September 25, 2010 – Ocean Conservancy's International Coastal Cleanup

The International Coastal Cleanup (ICC), a worldwide event since 1986, is coordinated each September by the Ocean Conservancy and has been happening in Wisconsin since 1989. Each year the ICC gathers data from the debris collected on waterways around the world.

For more information: www.coastalcleanup.org.

September 29-October 1, 2010 – Science in the Northwoods Conference

September 1: Early Bird Registration and Abstract Submission Deadline

September 15, 2010: Final Registration Deadline

For more information: http://limnology.wisc.edu/Science_in_the_Northwoods.php

November 3-5, 2010 – NALMS 30th International Symposium

The North American Lake Management Society invites you to join them in Oklahoma City, OK this fall for their 30th annual symposium. The theme for 2010 is "The Water Cycle: Managing the Challenges in Water Resources". For more information: www.nalms.org

November 8-10, 2010 – MN-WI Invasive Species Conference 2010: Working Together to Control Invasive Species, St. Paul, MN

This is an all-taxa conference covering invasive aquatic and terrestrial plants, animals, pests, and pathogens. The focus is to strengthen awareness of invasive species issues, prevention, and management. For more information: www.minnesotaswcs.org (see right side of page).

To get the most up-to-date lake-related events, go to

www.uwsp.edu/cnr/uwexlakes and click on the Lake Event Calendar.



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Reflections

Duck feathers
drifting on the pond—
dappled dusk sky.

Sunset!
Mosquitoes attack,
we retreat.

Lightning
and lightning bugs—
beyond words.

~ Mike Garofalo

