

Nature's Love Connection

Birds  Insects  Lakes



Birds that feed on flying insects, such as flycatchers and swallows, are among the most quickly declining group of bird species, but little is known about why their populations are shrinking. Paul Schilke, a master's degree candidate at the University of Wisconsin-Madison Forest and Wildlife Ecology Department, is conducting research in northern Wisconsin to investigate how insects that live around lakes affect the birds that feed on those insects. His findings will help scientists, resource managers, and property owners better understand how to protect and help our flying feeders.

The abundance of birds that catch insects while flying - aerial insectivores - is declining across a broad region of the northern United States and southern Canada. According to the North American Breeding Bird Survey, 14 of the 18 species that breed in the forests of the upper Great Lakes region are experiencing significant population declines dating back to the 1980s. Despite their drop in numbers, very little research has been done to understand the underlying causes or potential solutions to the problem. Paul Schilke, a UW-Madison graduate student, hopes to change that.

Schilke is conducting ongoing research at several lakes in Vilas County in northern Wisconsin to investigate the plight of avian insectivores. Why start with lakes? Well, many flying insects, such as midges, dragonflies, and mosquitoes, breed and live in and around lakes, so lakes can be seen as the first link in the chain that leads to the birds. If properties of the lakes are changing, due to things like climate change, acid rain, or various sources of contamination, this could affect the abundance and distribution of the insects that the birds use for food.

(Continued on page 2)

Courtesy of Paul Schilke



Schilke is shown here handling a least flycatcher with Dr. Anna Pidgeon.

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Wisconsin Lakes Partnership

Lake Tides

The newsletter for people interested in Wisconsin lakes

Through trophic subsidies, the productivity of a lake contributes to the health and productivity of many animals that aren't necessarily lake-dependent, and these species in turn can increase the productivity of plants and other animals both near and far.

The process of lake-dependent insects feeding land-dwelling birds produces what ecologists call a trophic subsidy. Through trophic subsidies, the productivity of a lake contributes to the health and productivity of many animals that aren't necessarily lake-dependent, and these species in turn can increase the productivity of plants and other animals both near and far. This is a core concept of ecology, helping us to understand why plants and animals thrive in some places and struggle in others. Aldo Leopold's essay "Odyssey," from *A Sand County Almanac*, poetically explains the idea by contrasting the complex circuit of energy and nutrients found in healthy ecosystems (via "atom X") to highly simplified chains found in most modern agriculture and developed landscapes:

Between each of his excursions through the biota, X lay in the soil and was carried by the rains, inch by inch, downhill. Living plants retarded the wash by impounding atoms; dead plants by locking them to their decayed tissues. Animals ate the plants and carried them briefly uphill or downhill, depending on whether they died or defecated higher or lower than they fed. No animal was aware that the altitude of his death was more important than his manner of dying. Thus a fox caught a gopher in a meadow, carrying X uphill to his bed on the brow of a ledge, where an eagle laid him low. The dying fox sensed the end of his chapter in foxdom, but not the new beginning in the odyssey of an atom. An Indian eventually inherited the eagle's plumes, and with them propitiated the

Fates, whom he assumed had a special interest in Indians. It did not occur to him that they might be busy casting dice against gravity; that mice and men, soils and songs, might be merely ways to retard the march of atoms to the sea.

Researchers investigating the problems facing birds and other species recognize that we have a long way to go in understanding how nutrients and energy move about the ecological web and shape the fate of wildlife populations. Only recently has computer software and hardware made it possible to conduct sophisticated analysis of wildlife habitat and life cycles and how they change over time and space. Drawing on the resources of the Forest and Wildlife Ecology Department's SILVIS lab, Schilke's goal is to better understand the complex interrelationships between the lakes, birds, and the insects they depend on.

He started by gathering a wide range of ecological information about the lakes from three different sources. First he is collecting information on birds, by conducting point

Only recently has computer software and hardware made it possible to conduct sophisticated analysis of wildlife habitat and life cycles and how they change over time and space.



C. Arntso

This chimney swift is flying home with a mouthful of insects for its young.

The SILVIS Lab at UW-Madison's Forest and Wildlife Ecology Department

People are changing the environment more rapidly than ever before in the history of humanity. The Spatial Analysis for Conservation and Sustainability (SILVIS) Lab at UW-Madison examines these changes at broad spatial scales. Researchers at the lab study processes that cause changes, quantify patterns of change, and assess effects of these changes on the environment. Their research contributes to conservation biology and landscape ecology, and often combines field-acquired data with remote sensing data in a geographical information system (GIS). Professors Anna Pidgeon and Volker Radeloff guide over a dozen students and several staff working both in the lab and at field sites across the world. Learn more at www.silvis.forest.wisc.edu.



counts to determine how the bird community differs nearby and far from the lake. He is also putting color bands on least flycatchers, to obtain information on foraging, as well as nestling feeding patterns at several locations around each lake.

Second, he has placed insect traps around and at different distances from the lakes so that he can measure insect species composition and abundance, including how the insect populations vary with increasing distance from the shore. Finally, he has recorded information about the land cover surrounding the lake, including the types of plants, the height of the forest canopy, and the diversity of foliage height. These structural habitat features could influence the presence of insects and the feeding habits of the birds.

A preliminary analysis of his 2013 data suggests that the bird community as a whole in the nearshore area was significantly different from the bird community as a whole further inland. The insect traps revealed that emergent insects that spend their early life underwater, such as midges and dragonflies, decreased exponentially as the distance from shore increased. Schilke has selected new sites to sample in 2014 based on these results: “One of our research goals is to model patterns of aquatic insect movements inland, away from the shore, under different vegetation

Aerial Insectivores

Aerial insectivores are a group of birds that share a feeding habit, but aren't necessarily related in other ways. Some, like swifts, swallows and martins, catch and eat their prey while continuously flying. Others, like phoebes, perch while dining, flying off to nab nearby insects. Other aerial insectivores you may have seen or heard in Wisconsin include the olive-sided flycatcher, willow flycatcher, eastern wood pewee, and eastern kingbird. Researchers around the world are looking into possible explanations for the decline of aerial insectivores, including broad changes in insect populations, loss of habitat, and possible contaminants in their food sources. Finding an answer is complicated by the migratory nature of many aerial insectivores, as some spend their winters as far away as Argentina.

conditions. We want to understand how the character of the forest, whether clearcut, deciduous, or evergreen forest, influences the movement of insects and birds. We also want to separate the effects of vegetation near lakeshores from the effect of additional food resources to see if the differences we observed can be attributed to additional insects available near lakes.”

Rising water levels have also impacted the research by shifting the location of the lakes' edge. “We've noticed fewer large emergence events for some groups such as mayflies

(Continued on page 4)



Courtesy of Paul Schilke



Courtesy of Paul Schilke



this year compared to last year. Whether this is due to water level changes, weather or just natural variation, it will be interesting to see if we can detect any response or lack of response by the birds.”

Ultimately, Schilke will use his data to develop and test statistical models that explain patterns of bird abundance and diversity as functions of the insect and lake characteristics. He aims to identify the most important factors that relate to the distribution of avian insectivores in northern Wisconsin. Schilke hopes that the greater understanding of the relationships between lakes, insects, and birds will help scientists and land managers in their efforts to conserve aerial insectivores and the complex ecosystems they rely on. 💧

How can you help?

Research has shown that keeping shorelines in their natural condition as much as possible helps promote natural ecological processes and provides food and shelter for aquatic insects. Many aerial insectivores that rely on sighting insects, such as eastern kingbirds, prefer to forage from dead branches where they have better views and maneuverability. Some species such as great crested flycatchers, tree swallows, and purple martins are cavity nesters, so leaving dead trees (snags) near the shoreline when it's safe to do so is a good idea. Placing nest boxes is another possibility for improving conditions for these species. You can learn more about placing and maintaining purple martin houses from the Wisconsin Purple Martin Association: www.wisconsinpurplemartins.org.

Schilke's insect traps will help measure insect species composition and abundance.



Did you know fathead minnows help control mosquitoes?

DYK

Wisconsin's native fathead minnows have been stocked into sloughs, ponds, and ditches for mosquito control. Research on the fathead minnow in Madison found it to be effective in reducing mosquito densities in stormwater drainage channels and ponds, including those mosquito species implicated in the spread of West Nile virus. In the lab, a single minnow consumed an average of 74 mosquito larvae in a 24-hour period. Minnows may even be more effective at reducing mosquitoes than bats or purple martins! **We don't recommend dumping minnows into your lake, which is both an expensive idea and could introduce invasive species or VHS disease.** To help out fatheads, make sure that they have access to nesting sites. Fatheads usually seek out the underside of a submerged log or rock resting on a sand or gravel lake bottom. They will then excavate a nesting cavity underneath the object and the females will enter the cavity and attach eggs to it. Like sunfish, male fatheads will vigorously protect a nesting site and stick around to care for the fertilized eggs.



Photo by John Lyons - WDNR



Eurasian Watermilfoil's Effect on Lakes: Not So Cut and Dry

The non-native species Eurasian watermilfoil (EWM) has been documented in 540 Wisconsin waterbodies. We know where it occurs, but what are EWM populations in Wisconsin typically like? Research scientists have surveyed 92 EWM lakes in order to answer that question. The results surprised them and challenged some commonly held EWM myths. What they learned is that:

EWM populations are often small in scale.

In most of the 92 lakes studied, EWM was found in less than 10% of the littoral zone. EWM was more widespread in southern lakes, reservoirs, lakes with low water clarity, and lakes with shallow maximum rooting depth. Drainage lakes also had higher levels of EWM occurrence compared to seepage lakes.

EWM isn't always associated with lower species richness.

EWM has been shown to displace native species, but in some cases, it may simply be taking advantage of altered environmental conditions. Additionally, several long-standing EWM populations have been observed where the native plants in the lake continue to hold their ground. Oftentimes, EWM distribution and abundance resembles that of several other native species (like coontail, elodea and sago).

EWM populations vary over time.

In 13 lakes with no EWM management actions, the spread of the plant in the lake followed no clear and consistent pattern. In some lakes, the EWM declined while in others it increased. Some unmanaged lakes saw their EWM population grow initially only to crash in subsequent years. Even though EWM can exist at low levels in certain lakes for many years, random disruptive events (like floods or sudden nutrient pulses) can cause EWM to increase.

Eradication is often an unrealistic EWM management goal.

Reasonable management goals should be set after careful consideration of available science as well as the costs and benefits of available treatment options. Despite the increase in resources to control EWM, we lack the basic information necessary to set reasonable management expectations. Although EWM control efforts are often designed to “restore” an ecosystem, we have yet to demonstrate how this may be accomplished and we have yet to evaluate the economic and ecological costs.

Article adapted from the Wisconsin DNR's EWM Research Factsheet (PUB-SS-1074 2011) available online at dnr.wi.gov/lakes/plants/research.



Photo by Robert Korth



Wisconsin Lakes Partnership Convention



**Healthy Watersheds
Healthy Lakes
Healthy People**

Photo by Amy Kowalski



Water enthusiasts gathered during the poster session at the 2014 lakes convention to learn and share.

Each year the Wisconsin Lakes Partnership plans a statewide convention, and in April, we will celebrate the 37th year of the event. This unique convention brings together citizen scientists, businesses, and lake, river and wetland professionals to interact, learn, share and engage with one another to ensure a healthy future for our waters. The Wisconsin Lakes Partnership includes anyone interested in preserving and protecting our water resources, and is based on three main components (and organizations): 1) Science (Wisconsin Department of Natural Resources), 2) Education/Outreach (University of Wisconsin) and 3) Citizens (Wisconsin Lakes).

This year's convention planning committee is again issuing a Call for Presentations. Anyone interested in sharing information that showcases our theme, Healthy Watersheds, Healthy Lakes, and Healthy People, is invited to submit a proposal. We are asking potential presenters to keep in mind the broad audience at the convention; you will be asked to give three examples of practical take-away messages that will be offered in your presentation. The 2015 Convention will also include a poster session, allowing for greater participation in idea and information sharing. Look for the Call for Posters later this fall.

Presentation categories related to the theme "Healthy Watersheds, Healthy Lakes, and Healthy People" include:

- Ecology
- Groundwater/Water Levels
- Aquatic Invasive Species
- Eutrophication/Non-Point
- Public Health
- Native Plants/Animals
- Watersheds
- Success Stories
- Lake Organizations

**Call for
Presenters**

To fill out a presentation proposal for the 2015 Wisconsin Lakes Convention, go to www.uwsp.edu/uwexlakes and click on the convention tab.

Presentation proposal deadline - August 28, 2014.

Please consider submitting a proposal to share the wonderful work you are doing for our Wisconsin lakes. Look for more information about the 2015 Wisconsin Lakes Partnership Convention in the next edition of *Lake Tides*, on our website, or on our Facebook page! 💧

www.uwsp.edu/uwexlakes

Preserving Water Quality in Wisconsin

WELCOME ABOARD!

The Lakes and Rivers Section of the Wisconsin Department of Natural Resources is happy to announce five new team members that started work this week:

Ashley Beranek will be assisting in the management and improvement of the Surface Water Integrated Monitoring System (SWIMS). In addition to her new position in Lakes & Rivers Ashley works in the Water Evaluation Section helping draft the state's impaired waters list. This work is important for implementing the state's strategy to target nutrient control efforts and restore water quality in lakes that have issues with algae blooms.

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Tim Campbell is the new AIS Communication Specialist. Tim comes to DNR and UW-Extension after three years at the University of Wisconsin Sea Grant Institute. Tim worked with the Wisconsin AIS Partnership to help share AIS information and to develop new AIS prevention projects. Wisconsin's AIS strategy uses social marketing and evaluation research to establish lake-healthy norms and gauge the success of our outreach work.



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Jason Granberg will help implement the Wisconsin Invasive Species Strategy, specifically working with land owners, contractors and partners to facilitate the Phragmites Project. This project will work to eliminate early infestations of invasive phragmites across Wisconsin. Prior to joining the DNR, Jason Granberg served as the Restoration Ecologist and Biologist for the Capital Area Regional Planning Commission for Madison, Wisconsin.



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Amanda Perdsock is the new AIS Monitoring Specialist and Rapid Response Coordinator. She will provide statewide assistance to the AIS monitoring and early detection efforts in surface waters throughout the state. Early detection is another critical component of Wisconsin's AIS strategy, as most species can be best managed if they are found early in their infestation.



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Dave Winston will be assisting in the management and improvement of multiple Water Division IT systems and incorporating GIS data into the interactive web map viewer. Dave also works with Science Services using LiDAR to digitize culverts throughout the state. DNR has made numerous updates to its lake databases and online maps. Take some time to look up your favorite lakes on the DNR webpage to see the tremendous information now available.



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Underwater Insect Eater

Not Exactly a Venus Flytrap, but Pretty Cool!

By Susan Knight, Trout Lake Station, UW-Center for Limnology and Susan Borman

Leafy, pale green stems wave in shallow water. A gentle tug unearths the white, bladder-covered stems lying hidden in the mud. Two distinct halves make the whole – light-capturing leaves on one end and prey-capturing traps on the other.

[These plants] supplement their diet by trapping small insects in a bladder that is like the bulb on a turkey baster.

So goes the introduction to *Utricularia intermedia* (flat-leaved bladderwort) in the newly revised *Through the Looking Glass*. The Second Edition is revised and expanded to reflect changes that have occurred in the aquatic plant world since the first edition. A more detailed description of some bladderwort and pondweed species, including additional illustrations has been included.

Utricularia is a plant named for its tiny bladders, or utricles. Currently there are 220 listed species of *Utricularia* and these plants are found throughout the world. They typically are found in waters where the nutrient concentration is relatively low and supplement their diet by trapping small insects in a bladder that is like the bulb on a turkey baster.



Photos by Paul Skawinski printed with permission from the book "Aquatic Plants of the Upper Midwest"



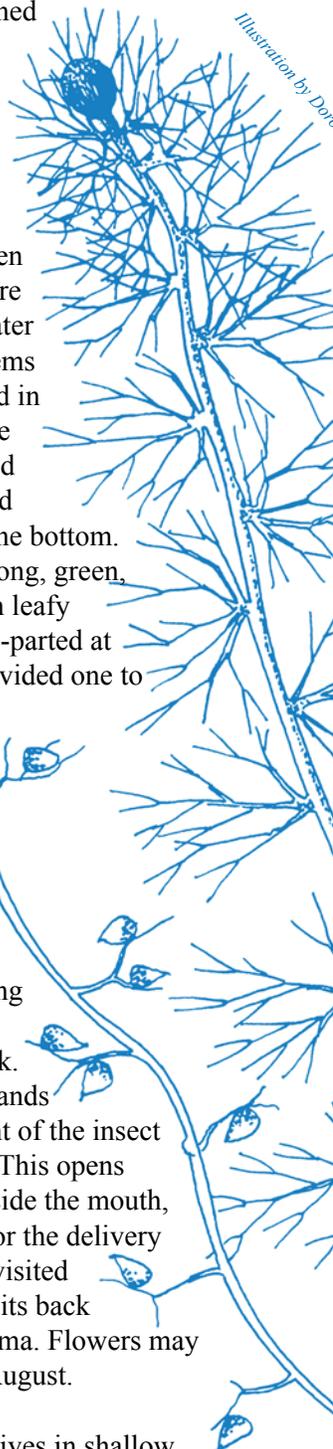
Shown here (top) you can see the two distinct ends of the plant, and (left) its dainty little yellow flower that pops out above the surface of the water.

Tiny hair-like projections at the opening of the bladder are sensitive to motion of tiny zooplankton passing by. When these hairs are stimulated it causes a flattened bladder to suddenly inflate, sucking in water and the passing animal. The door closes behind it.

Flat-leaved bladderwort has two parts: the leafy green stems (7.5 to 25 cm long) are easily visible in shallow water and the bladder-covered stems are usually found embedded in the sediments. However, the plant may become dislodged and can sometimes be found drifting or creeping along the bottom. The leaves are up to 2 cm long, green, and numerous and dense on leafy stems. Leaves are usually 3-parted at the base and then further divided one to three times.

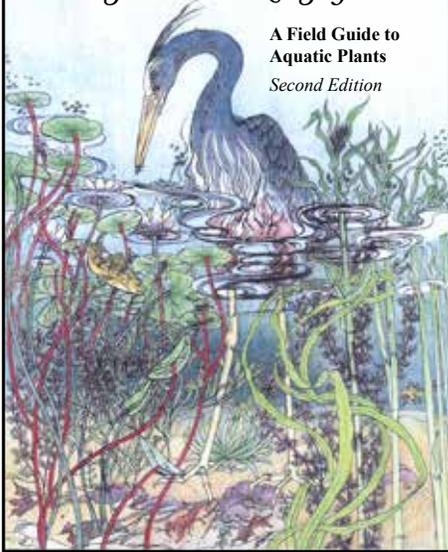
Yellow, two-lipped flowers are produced on 6-20 centimeter-long stalks that protrude out of the water. The lower lip of the flower is nearly twice as long as the upper lip, and there may be 2-4 flowers per stalk. A bee, or other pollinator, lands on the lower lip. The weight of the insect pulls down the lip slightly. This opens the flower like a mouth. Inside the mouth, the 2-parted stigma waits for the delivery of pollen. If the insect has visited other flowers the pollen on its back will adhere to the open stigma. Flowers may develop in June, July and August.

Flat-leaved bladderwort thrives in shallow, usually alkaline water but may also be found in deeper water and streams. It prefers soft



Through the Looking Glass...

A Field Guide to
Aquatic Plants
Second Edition



A New Face on an Old Friend

Through the Looking Glass: A Field Guide to Aquatic Plants has undergone a face-lift of sorts.

What's New in the Second Edition

The second edition is revised and expanded to reflect changes that have occurred in the aquatic plant world since the first edition. The scientific names for plants are constantly evolving based on new research about relationships between species and rules of nomenclature. Fourteen of the species in the first edition have undergone name changes. These plants are listed under their new names, but the previous names are also included. Another change in this edition is expanded discussion of aquatic invasive species. Most of these are described under a section called Similar Species to point out key differences between native species and similar looking non-native plants with the potential for invasive growth. Another improvement is more detailed descriptions of pondweed and bladderwort species, including additional illustrations. Finally, a number of species have been added to this edition for more coverage of our regional aquatic flora.

A heartfelt thank you goes out to all of those who helped get this second edition published: Robert Freckmann, Kim Becken, Susan Borman, Susan Knight, Robert Korth, Jeff LaMarche, Michelle Nault, Tim Plude, Michael Putnam, Kelly Wagner, Carol Warden, Sandy Wickman, Brock Woods and Hnue Yang.

A special thanks to the very talented Dorothy Semple and Carol Watkins for the beautiful artwork.

Order your copy today by contacting UWEX Lakes at 715-346-2116 or uwexlakes@uwsp.edu. Visit our bookstore under "Publications & Resources" for more information and a sneak peak: www.uwsp.edu/uwexlakes

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substrate. It often co-occurs with the common bladderwort (*Utricularia vulgaris*). Because the bladders are normally held below the sediment surface, the bladders are presumably catching benthic invertebrates, rather than invertebrates found in the water column.

Flat-leaved bladderwort overwinters primarily by winter buds, known as turions. The leafy and bladder-covered stems decay through the fall and winter, and the turions fall to the lake bottom or are caught in the ice. In the spring, new shoots, both leafy and bladder-covered, will emerge from the turion. 💧



Sharing the Lake with Our Feathered Anglers

If you are an avid *Lake Tides* reader, you may remember the article from our Spring 2009 edition (vol. 34 no. 2) titled “Call O’ the Loon: ‘Stop Using Lead, Please!’” The article covered the migrating, nesting and eating habits of this magnificent water bird, and cited several studies showing how ingested lead tackle is deadly for loons.

They can swallow lead tackle that has broken free from fishing line, eat fish that have ingested lead tackle, or even go after your bait while you’re fishing! “Young loons are particularly

known to follow fishing lures and be attracted to live bait,” warns Mike Meyer, Research Scientist for the Bureau of Integrated Science Services with the Wisconsin Department of Natural Resources. “If this seems to be the case while you are fishing, it’s best to retrieve your lines and move to another location.”

What should you do if you accidentally hook a loon while fishing or notice a loon tangled in fishing line?

If you have stout fishing line and a musky/salmon net, plus the ability to manage a 12 pound struggling bird, you may consider “landing” the loon, and removing the hook/line or transporting it to a local wildlife rehabilitation center. “Most rehab centers do not have a boat or the resources to capture a loon, and the DNR has limited resources and availability during open water season. The loon has a better chance of survival if you are willing and able to take action,” says Meyer.

Courtesy of REGI



The skilled and talented volunteers at the Rapter Education Group, Inc. helped this loon untangle its bill from fishing line.

Prevention is key!

The DO NOTs...

1. NEVER offer minnows to loons! It has been reported that folks are feeding loons that have become relatively tame. This almost guarantees that rewarded loons will approach fishing boats, increasing the risk of them getting tangled in lines/hooks.
2. DO NOT fish near loons that appear to be focused on your bait. It is best to temporarily remove your line(s) or move to a different fishing spot.
3. DO NOT attempt to capture a hooked/tangled loon if you do not feel safe doing so. If you feel you cannot retrieve a hooked/tangled loon safely, cut the line and report the situation immediately to your local wildlife biologist. Be sure to describe the bait used and the likely manner in which the loon is hooked. Only report if you are certain the bird has been hooked or is visibly tangled.
4. NEVER swaddle a loon! **Loons do not have diaphragms, and need to be able to expand their chest to breathe.** They cannot be restrained on their backs, especially for long term transport.
5. NEVER place a loon in a small body of water! Loons need at least ¼ mile runway to achieve flight (this is the length around a standard high school track). If a loon is placed on a lake that is too small for it to have a successful take-off, it will most likely try to move over land and be an easy dinner for predators.



Here are some recommendations if you decide to take action: **ONLY attempt to capture a hooked/tangled loon if you feel safe doing so!**

1. The loon will struggle and has a very sharp bill, so once the bird is *landed*, a partner should cover the bird immediately with a coat or towel, making sure the eyes are covered (this will ease the stress and struggle of the loon). Being careful not to hook yourself, kneel **OVER** (not **ON**) the loon to restrain it. **WARNING:** The loon will most likely defecate when handled.
2. Remove the bird from the net, carefully cutting or drawing the netting from wings and legs if they are entangled.
3. Once removed, one person can carefully restrain the bird while the other examines it, and if possible, removes any hooks or fishing line. If the hook is external with the hook exposed, you can cut the barb and pull the hook back through.
4. Once free from any hooks or fishing line, the loon can be released.

If you cannot free the bird, remove from the net and hold the loon firmly on your lap, **making sure to keep the wings and legs tucked in and its eyes covered with a coat or towel**, then transport it to shore. Take care not to hook yourself! You can then use a towel-lined, covered dog kennel or cardboard box to transport it to the nearest wildlife rehabilitation center, or it can also be transported in your lap. **Please be aware that if you are transporting a loon on your lap, it will struggle the entire time. If the loon's head is exposed, it will strike with its bill so care should be taken to keep the head covered, but loosely, so it can breathe.**

So, when you're out on the lake fishing and enjoying the peacefulness, remember to be considerate of other anglers...especially the feathered kind! "A loon can live for over 30 years," says Meyer, "so it's important for all of us to play a role in making sure the lives of these enchanting birds are as long and healthy as possible." 💧

Local Regulations

Lead fishing weights less than 1 ounce or smaller than one inch in diameter are prohibited for fishing on Escanaba, Pallette, and Nebish lakes in Vilas County.



A list of wildlife rehabilitation centers in Wisconsin are listed on the DNR website at <http://dnr.wi.gov/topic/wildlifehabitat/directory.html>. Not all rehabilitators can care for birds, however. A federal permit is required to work with protected avian species.

"Get the lead out!"

1. Stop using lead tackle!
2. Dispose of lead tackle properly! Do not toss it in the lake or a trash can – take it to your local household hazardous waste collection site.
3. Spread the word to fellow anglers!

Go to the LoonWatch website for a list of non-lead tackle suppliers www.northland.edu/loonwatch.

Courtesy of REGI



This x-ray shows how several lead sinkers can accumulate if a loon ingests them, causing lead poisoning, and, eventually, death.



Eating Your Catch

New Ways to Help You Choose Wisely

By Meghan Williams, Environmental Toxicologist, Fisheries Management, Wisconsin DNR

Figuring out which fish are safest to cook for your family's next meal is now even easier thanks to new publications, videos and website features from the DNR/DHS Fish Consumption Advisory Program.

Catching fish in Wisconsin waters isn't just a fun pastime; your catch can also be a tasty part of your diet. Fish has long been recognized as a great source of low fat protein and beneficial

omega-3 fatty acids like EPA and DHA, which help keep you healthy. However, most Wisconsin fish species and waters contain at least a small amount of contaminants like mercury, and some also contain PCBs. Fortunately, the Departments of Natural Resources and Health Services provide many ways for you to figure out how frequently and which fish you and your family can safely eat.

You're probably familiar with *Choose Wisely*, an annually-updated publication listing consumption advice for sport fish from Wisconsin waters. The 2014 edition hits the shelves this summer and includes changes to the advice for some species of fish from Lake Michigan and Green Bay, several rivers and northern lakes, and much more.

But, did you know that the Fish Consumption Advisory Program has many more ways for

you to learn about the benefits and risks of eating your catch? Read on to find out!

Benefits of Eating Fish

Read through the article *A Healthy Dose of Flavor* found in the April 2014 Natural Resources magazine, or by visiting <http://dnr.wi.gov/wnrmag/2014/04/healthy.htm>. In the article, you'll learn about which sport fish contain the highest levels of beneficial omega-3 fatty acids.

Favorite Fish Recipes

Check out the all-new – and completely free – online cookbook called *Healthy Dishes with Wisconsin Fishes*, which includes 25 recipes submitted by Wisconsin anglers and chefs. The cookbook has special tips for choosing fish with the least contaminants and highlights the healthiest recipes. The cookbook can be found at dnr.wi.gov by searching *Eating Your Catch*.

Online Advice Tool

Found on the same webpage as the forementioned cookbook, is the now mobile-friendly *Find Advice* online query tool that includes a clickable map so you can get consumption advice for any lake or river in Wisconsin! Try tapping the *find my location* map symbol (📍) from a GPS-enabled smartphone to get advice for your current fishing spot.

Reel in these other new features!

Now you can stash an *Eating Your Catch* Wisconsin Wildcard in your tacklebox for a quick reminder of general advice for most Wisconsin waters.

Updated videos in English, Spanish, and Hmong on the DNR's YouTube channel help people of all ages learn about safe eating! 💧



Consumption advice from the convenience of your smart phone:

Go to dnr.wi.gov and search *Eating Your Catch*.

Courtesy of Wisconsin DNR Flickr





CLMN (and CBCW) Superstar



Wisconsin is fortunate to have many talented and knowledgeable people acting as Citizen Water Quality Scientists on their lakes. We would like to highlight some of the accomplishments of the volunteers in the Citizen Lake Monitoring Network (CLMN). Want to see a CLMN volunteer acknowledged in Lake Tides? Please send information to Amy Kowalski, Lake Tides Editor, at akowalski@uwsp.edu.

Thomas Zuege lives on Anvil Lake in Vilas County. For many years, volunteers have monitored this 398-acre lake for zebra mussels, Eurasian water-milfoil, curly-leaf pondweed, loon productivity, lake level, and dates of ice-on/ice-off. It was decided that Citizen Lake Monitoring Network volunteers who were trained to identify aquatic invasive species would report their findings to just one “head volunteer monitor.” On Anvil Lake, that volunteer is Tom Zuege. Tom, in turn, reported these findings to the Department of Natural Resources, which were ultimately entered into the Surface Water Integrated Monitoring System (SWIMS) database. This database can then be used by lake organizations to create reports and track trends over time. AIS monitoring on lakes is a little easier when someone on the lake is in charge of keeping track of findings.

In addition to his CLMN duties, Tom is a long-time Clean Boats Clean Waters (CBCW) watercraft inspector. He attended one of the first trainings back in 2005. Since then, Tom can be seen at the boat landing on Anvil Lake almost every Sunday morning during open water season (minus maybe just two) greeting boaters and checking boats. Now that’s dedication! Tom is also a skilled trout fisherman and amateur archaeologist. He knows a great deal about petroglyphs found along the south shore of Lake Superior and has even discovered some.

Many, many thanks to Tom Zuege for the hundreds of hours he has spent at the boat landing sharing his educational message with boaters! We are fortunate to have such a dedicated volunteer working to preserve and protect Anvil Lake.

Q&A Lake Districts

We often get phone calls and emails 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.

Q: What’s the average budget of a lake district? What portion of districts charge a levy, and what portion use special charges to raise money?

A. Existing and new lake districts often wonder what their fellow districts are doing to raise funds. Districts have a range of options available to them, from the general property tax levy, to special assessments and charges, to borrowing and fundraisers. Unlike local governments and school districts, there is no central office in Wisconsin that annually compiles lake district budget information. UW-Extension Lakes periodically surveys lake organizations to update contact information and learn more about their operations. Our survey is not as complete as the data collected on other local governments by the Wisconsin Department of Revenue. We only have budget data on a little over half of lake districts (113); the other half may have no budget (indicating that they are largely dormant) or they have not sent updated budget information to our office. For the districts that do report, more than half (65) report budgets under \$25,000. Most districts with budgets over \$50,000 rely on the general tax levy and grants. DNR grants can, in any single year, represent a significant portion of a lake district budget. The same district on a year without a grant might have a much smaller budget. Just under half the reporting districts indicate using a special charge or special assessment to raise funds, usually on a flat rate per property or owner. Some differentiate between on-shore and off-shore properties. The North Lake Management District near Hartland has the highest reported special charge rate at \$500 per property; most common is a \$50 rate. Note that both the levy and the special charges are capped based on either the levy rate or the total value of property in the district. UW-Extension Lakes has updated its database management system for lake organizations (the Lake List) and we plan to record changes in reported lake district budgets over time. We are also planning a special Lake District Treasurers Workshop at the 2015 Lakes Partnership Convention (see page 6). You can view the updated Lake List (an online directory of lake organizations) and find instructions for sending updates and corrections on our webpage (www.uwsp.edu/uwexlakes).

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

A Fond Farewell to Our Friend and Colleague



Laura Herman is gracefully slipping into her retirement skin as she waves a fond farewell to over 30 years of service to the state of Wisconsin. She has a remarkable knowledge of all things water - from water quality, to aquatic life (whether native or invasive), to policies that impact water. Not many people can churn through tasks as quickly and effectively as Laura, simplifying the complicated, but asking the questions that need to be asked in the process. Laura is a biologist, an educator and an investigator.

“Working with Laura always means there will be laughter involved.”

“Laura is always helping people realize their potential to accomplish what they set out to do.”

Humor is certainly a staple in Laura’s approach to life, and that came through in her work environment as well. It was always a hoot to watch her in the “DIY Lake Monitoring Gear” workshops as she ran around like MacGyver helping people make crayfish traps and aquascopes from oil funnels and PVC pipe. Her enthusiasm is contagious! That infectious enthusiasm, her dedication to Wisconsin’s citizen scientists, and creativity are some of the common themes that came through when asking her colleagues to describe her.

“Her commitment goes far beyond her work life and she’s always willing to think outside the box.”

“Laura’s humor and ‘can-do attitude’ always enhanced our team; and don’t forget about the pumpkin bars!”

You can bet that retirement won’t keep her from continuing to be involved in protecting our cherished lakes, rivers and wetlands – something so near and dear to her heart.

See you on the lake, Laura! 💧

“Lucky for us, she’ll always be a part of our Lakes family.”

“Her support for, and commitment to our citizen volunteers was unwavering.”

FREE Tool for Learning About Wisconsin’s Buried Treasure

Know a teacher who would like to expand or improve their science education program? Have them check out this opportunity to receive a free sand-tank groundwater model for their school! This model is one of the best tools to educate all ages about groundwater and has been described as a “gold mine” for groundwater education and a great addition to any science curriculum.

Application Deadline:
November 1, 2013

Groundwater is one of Wisconsin’s most precious natural resources. Managing the critical issues of groundwater quality and quantity require an understanding of a buried underground resource that is too often surrounded in mystery and myth. “It is important that students understand what groundwater is since nearly 70 percent of all Wisconsin residents rely on this valuable resource for their basic water needs,” says Kevin Masarik, groundwater specialist with University of Wisconsin-Extension (UWEX).

In addition to receiving the models, educators will attend a free workshop where they will receive instruction on how to use the model, as well as learn about geology and other important issues that affect groundwater in our state. “The positive comments and evaluations from past participants is the reason we have continued to offer the workshops for the past 15 years,” says Laura Chern of the Wisconsin Department of Natural Resources (DNR). “The groundwater models are without a doubt the best visual aid available to teach about a resource that you can’t normally see.” Educators selected for this opportunity can choose to attend a workshop in Mt. Horeb, Ashland or Sheboygan.

The workshops are provided through a partnership among the DNR, UWEX, UW-Stevens Point and the Wisconsin Geological and Natural History Survey. For an application or to learn more, visit: <http://dnr.wi.gov/education/educatorresources/groundwater/>



2014 Invader Crusaders

Over 20 Invader Crusaders were nominated for this year's Invader Crusader awards – the most impressive turnout of quality crusading in recent years. Congratulations to this year's award recipients!

Professional Individual – Jason Nickels, Mequon
Chrystal Seeley-Schrek, Madison
Tom Ward, Manitowoc County
Mike Yanny, Menomonee Falls

Professional Group – Door County Invasive Species Team, Door County

Volunteer Individual – Tammy Bieberstein, Madison
Greg Karch, Oshkosh
Judy Ruch, Presque Isle

Volunteer Group – Girl Scout Troop 2789, Oconomowoc



To read more about these award recipients, go to the DNR Lakes Blog at http://dnr.wi.gov/news/Weekly/Article_Lookup.asp?id=2991

CALL ENDA R

September 9-11 – 10th Annual Great Lakes Restoration Conference, Grand Rapids, MI

Help celebrate a decade of action for the Great Lakes and a special tribute to Peter Wege, a pioneer of the Healing Our Waters-Great Lakes Coalition who is sponsoring the event again this year. Join over 400 concerned citizens and professionals throughout the Great Lakes region to learn about important restoration issues, network with other supporters and activists, and develop strategies to advance federal, regional and local restoration goals.

For more information: <http://conference.healthylakes.org/>

September 20 – Ocean Conservancy's International Coastal Cleanup

An astounding 648,015 volunteers in 92 countries picked up more than 12.3 million pounds of trash in our 2013 International Coastal Cleanup. Take the *Pledge to Fight Trash* and join thousands across the nation as they volunteer their time to keep our coasts naturally beautiful.

For more information: www.oceanconservancy.org/keep-the-coast-clear/pledge.html

October 15-17 – Science in the Northwoods, Boulder Junction

Join us for these two days of diverse, 5-10 minute research presentations by scientists, managers and educators doing research in the Northern Highlands region. Ample time will be allotted for informal discussions during coffee breaks, lunches and an evening BBQ.

For more information: <http://scienceinthenorthwoods.org/>

October 20-22 - Upper Midwest Invasive Species Conference, Duluth, MN

Attend the 3rd biennial multistate conference to share information on ALL invasive aquatic and terrestrial plants, animals, insects, and pathogens. For more information: www.umisc2014.org/

October 25-26 - North American Loon Symposium, Ashland

Researchers, wildlife experts, state and non-profit agencies, and loon enthusiasts will gather at Northland College to discuss threats and concerns effecting the common loon and increase awareness of stakeholders to current research and trends. A loon symposium of this size and scope has not taken place in North America in more than a decade! Join us!

For more information and to register, go to: www.northland.edu/loonsymposium.htm

November 12-14 – NALMS 34th International Symposium - Tampa

“Managing for Results: In-lake and Watershed Management” is the theme for this year's international gathering of lake managers, regulators, educators, researchers, students, and corporate partners. For more information: www.nalms.org (click on conferences & events)



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Reflections

Rest is not idleness, and to lie sometimes on the grass on a summer day listening to the murmur of water, or watching the clouds float across the sky, is hardly a waste of time.

~ Sir J. Lubbock

