



Highlights of the Annual Lake Committee Meetings Great Lakes Fishery Commission proceedings, Ypsilanti, MI

This second of a series of annual special reports is a summary of the Region-Wide reports offered at the annual Lake Committee meetings, hosted by the Great Lakes Fishery Commission in March 2011. We encourage reproduction with the appropriate credit to the GLSFC and the agencies involved. Our thanks to the staff of the USFWS for their contributions to these science documents. Thanks also to the Great Lakes Fishery Commission, its staff, Chris Goddard and Marc Gaden, for their efforts in again convening and hosting all the Lake Committee meetings in Ypsilanti.

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Mass Marking programs for 2011

The second year of mass marking in the Great Lakes has ended for this Spring. The USFWS traveled to four states and eight state fish hatcheries to code-wire tag and fin-clip millions of Chinook Salmon for stocking in the Great Lakes. Fish tagged this spring were stocked in Lakes Michigan, Huron and Superior to determine the levels of natural reproduction by Chinooks and the level of exchange among the lakes and jurisdictions. This year's salmon will enter the sport fishery in 2012.

"The common objective is to tag all Chinook Salmon stocked in the Great Lakes, and use the information from tagged fish recovered from fisheries and agency assessment to improve fisheries management," said Charles Bronte, fisheries biologist and FWS lead agent for mass marking implementation. The Service also purchased tags for Lake Ontario where New York and Ontario have been tagging Chinook salmon since 2008.

Beginning in August about 4.6 million lake trout at three federal hatcheries in Michigan and Wisconsin will also receive coded-wire tags and fin clips to study rates of

natural reproduction, relative survival, and movement among various strains and other experimental groups.

More than 5.3 million fish were tagged in the 2010 inaugural mass marking season at both federal and state fish hatcheries including 4.7 million lake trout and 1.1 million Chinook salmon. This technique has been successfully used in the Northwest for marking hatchery-reared Pacific salmon, and is known as "mass-marking" since millions of fish are rapidly tagged and marked each year. For more information about the Service's mass marking project: www.fws.gov/midwest/massmarking2010.htm.

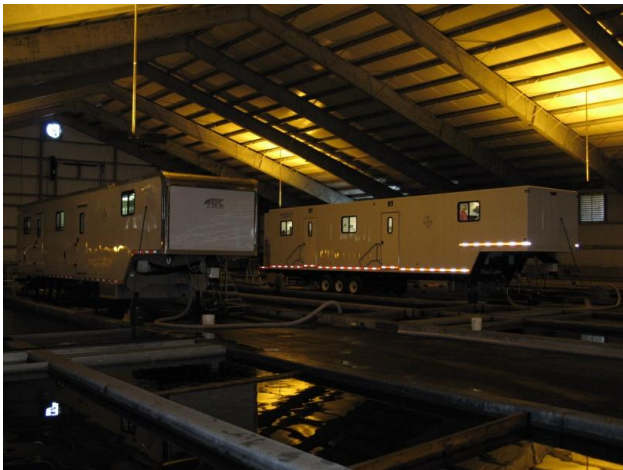
Funding for this project came in part from the President's Great Lakes Restoration Initiative. Through the Great Lakes Fish and Wildlife Restoration Act grant program, \$2.6 million in GLRI funds were used to purchase two automated coded-wire tagging trailers. Provisionally, \$1.5 million in Great Lakes Restoration Initiative funding will be used to support tagging activities in 2011. For more information on the Service's GLRI activities: www.fws.gov/GLRI. ✧

Great Lakes Fish Mass Marking Program, 2010

Introduction

Great Lakes fishery managers annually stock over 30 million salmonines to diversify sport fisheries, restore native fish populations, and control invasive fishes. However, little is known about how well these fish survive, contribute to fisheries, and the levels of natural reproduction by naturalized non-native salmonines. As a result, in 2000 a basin-wide plan was developed to mark all stocked salmonines. The data from this effort would provide greater insight into survival of stocked fish, levels of natural reproduction, and the contribution of stocked fish to reestablish native fishes.

The program would also provide the ability to manage harvest away from wild fish, and an overall evaluation and improvement of hatchery operations. After evaluating a number of marking and tagging options, fisheries managers chose to pursue mass-marking of all stocked salmonines using adipose fin-clips and coded-wire tags modeled after a program for marking Pacific salmon in the northwest United States.



The centerpiece of the Great Lakes program is the automated tagging and marking trailers from Northwest Marine Technology (NMT). The AutoFish System' is an alternative to manual clipping and tagging in high-volume stocking applications. The AutoFish SCT6 is an automated system contained in a 45' aluminum 5th-wheel trailer that has a fish sorter and six individual processing lines. The system can sort by length, adipose clip, and coded-wire tag salmonines from 57 to 142 mm without anesthetic or human

handling. Manual tagging trailers, which are designed for maximum efficiency and staffed by traditional fin-clipping staff, use portable tagging equipment, and will be used at hatcheries with lower production or where requirements (e.g. water supply) for the AutoFish trailer cannot be met.

2010 Tagging Operations and Support Activities

In March 2010 the FWS hired two GS-9 fishery biologists to operate and maintain the AutoFish trailers and oversee tagging operations. Tagging began on March 23 and ended November 12 with a total of 1,104,166 Chinook salmon and 4,584,509 lake trout tagged and adipose fin-clipped (ADCWT). Three projects were approved 1) limited tagging of Chinook salmon stocked into Lake Michigan to validate recoveries in an ongoing OTC study to measure levels of natural reproduction, 2) tagging all federal lake trout stocked into lakes Huron and Michigan to evaluate movement, relative survival of strains, and levels of natural reproduction, and 3) support of NYSDEC effort to tag all Chinook salmon stocked into Lake Ontario.

Enhancement of the Tag Recovery Lab

During May last year, program staff visited four high-volume CWT recovery labs in Washington and Oregon, to observe the "state of the art" of CWT recovery, extraction and cataloging, and subsequently apply that knowledge to enhance the existing tag recovery procedures at GBFWCO. The tag recovery lab will be an integral component of the overall mass marking program. The lab will be responsible for receiving and collecting tagged specimens from cooperating agencies, extracting the 1.1mm CWT tags, and reading the codes. The vision is that these data, as well as fishing effort, location, and biological data associated with each fish, will be entered into a centralized relational database, once this is established.

Once extracted, CWT will be taken to the lab and read under magnification. The lab is outfitted with video-screen dissecting microscopes with frame grabbers in addition to traditional binocular microscopes. Computer work stations will be installed to allow direct entry of tag code data and associated recovery data in the future. ✧

The Great Lakes Mass Marking Initiative

All eight Great Lakes States and tribal fishery management agencies in the Great Lakes region, are seeking \$4.8 million to purchase equipment to mass mark all hatchery-reared juvenile salmon and trout. Fishery management agencies are also seeking \$5.4 million annually for the U.S. Fish and Wildlife Service to implement the marking program. Mass marking is essential to the effective management and restoration of the Great Lakes ecosystem as envisioned by the Great Lakes Restoration Initiative and outlined in the Great Lakes Fish and Wildlife Restoration Act.

Background

The economic value of the Great Lakes fishery is \$7 billion annually. Fish hatcheries play a major role in Great Lakes fishery management and rehabilitation. Tens of millions of fish are produced in federal, provincial, state, and tribal hatcheries and are stocked into the lakes to support species rehabilitation, invasive species control, and commercial, recreational, and tribal fisheries. Currently, local and state budgets are spending millions of dollars annually to support their hatchery programs.

One focus for restoration funds is fish and wildlife rehabilitation. The Great Lakes Mass Marking Initiative is an integral component of managing the recovery of fish populations. Fishery managers throughout the Great Lakes basin are strong proponents of the initiative, as they need better tools to effectively deliver their recovery programs and must rely upon sound, scientific information for making decisions. A large number of organized and well informed "user" groups also are active proponents of the initiative.



Fig. 1-Automated fish marking trailer (AutoFish System)

The marking of all hatchery fish with coded-wire tags is the first step in determining the effectiveness of fisheries management actions. The analysis of long term data sets from consistent monitoring will provide the scientific information needed to develop a unified approach for managing both wild and hatchery-reared fish populations and the users that exploit them.

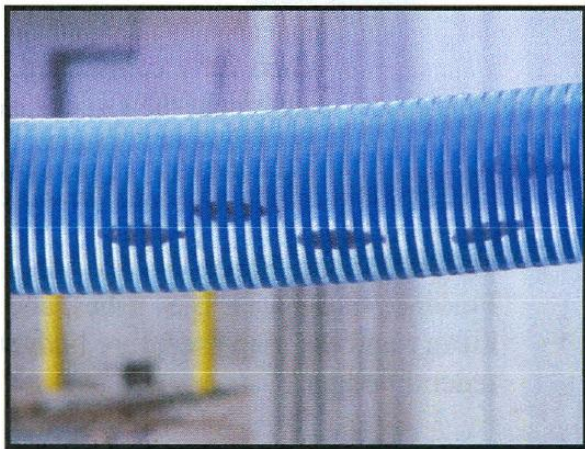


Fig. 2- Transporting fish from hatchery to marking equipment

A coordinated, basin wide marking program operated by the U.S. Fish and Wildlife Service, will provide managers with the science and insight to achieve their defined objectives for fisheries management. Without such a program, the Great Lakes could face decreased fishing opportunity due to the threat of

overharvest, a collapse of the forage base, a protracted program for lake trout restoration, or a public less informed or supportive about the effectiveness of fishery management programs to the fish communities of the Great Lakes.

The need for this basin-wide initiative is evident by all fish management agencies coming together to request funding for the Great Lakes Mass Marking Initiative and the establishment of the Great Lakes Marking Laboratory by the USFWS. In fiscal 2008 and 2009, Congress began the capitalization of the initiative by appropriating funding to the Service to purchase some of the equipment needed. The State of New York has also purchased mass marking equipment and other states are considering following suit.



Fig 3-AutoFish System marking equipment

Mass Marking Needs & future plans

Basinwide, the USFWS is requesting funding for three more Automated fish marking trailers (\$10.4 million total); 5 have been purchased to date (one by the State of New York and four by the USFWS). Three more are needed, including one more manual marking and tagging trailers, one was purchased 1 more needed (\$400,000) When fully capitalized, about \$5.4 million will be needed annually for the USFWS to implement the Great Lakes Mass Marking Initiative, basin-wide on the U.S. side.

The U.S. Fish and Wildlife Service requested \$7.8 million for the mass marking initiative through the Great Lakes Restoration Initiative. Of that amount, \$4.8 million would have been for equipment and hatchery upgrades and \$3 million for operations to continue to build the program. Partners have also requested funds through the appropriations process. This funding will allow for the purchase of three automated marking trailers and one additional manual trailer. [As of March, 2011, \$1.5 million was included in the GLRI for mass marking in 2011; Congress has yet to complete action on FY 2011 funding.]

In fiscal 2012, \$4.822 million is needed to complete the capital equipment purchases. An additional \$5.4 million is needed to operate all purchased trailers and to deliver tag recovery and other services. Funding sources could include the Great Lakes Restoration Initiative and FY 2012 congressional appropriations (or a combination of the two). Partners will be advocating for the FY 2012 funding needs.

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Lake Trout Production and Stocking

Lake Trout Yearlings - During 2010, the U.S. Fish and Wildlife Service (USFWS) released 4,223,600 yearling lake trout into the upper Great Lakes in accordance with Lake Committee rehabilitation plans. Of the total, 288,300 were released from shore, and 3,935,300 were released offshore using the *M/V Baird*. The Baird stocked yearlings from April 7 to June 11, 2010, traveling 2,696 miles on lakes Huron and Michigan during the season. All lake trout were either fin clipped or coded-wire tagged following marking guidelines. Distribution included 1,314,684 fish into Lake Huron and 2,908,916 fish into Lake Michigan.

The USFWS also released a total of 456,706 hybrid Seneca Lake strain yearling lake trout at six sites in the lower Great Lakes. Lake Erie received 144,772 yearlings off Dunkirk, NY, and Lake Ontario received 311,934 yearlings at five sites in the lake. All fish were stocked offshore by the USFWS and the NYSDEC. All yearlings stocked received an adipose fin clip and coded wire tag. Fish for this effort were raised at White River National Fish Hatchery (NFH) in Vermont, while the Allegheny NFH is undergoing renovations.

Lake Trout Fall Fingerlings - During 2010, the USFWS released 427,767 lake trout fingerlings from Iron River NFH into Lake Michigan between October 28 and November 4. In addition, a total of 37,014 Superior Klondike Reef (SKW) strain fall fingerling lake trout were stocked into Lake Erie on November 8, 2010. Lake Ontario received 122,400 hybrid Seneca Lake strain lake trout fingerlings in October.

Spring 2011 Stocking Plans - The USFWS is preparing to stock approximately 4,110,750 ($\pm 10\%$) yearling lake trout into the upper Great Lakes in 2011, including: 1,970,000 from Jordan River NFH, 1,200,000 from Iron River NFH, and - 940,750 from Pendills Creek NFH.

All of the lake trout planned for stocking in 2011 were adipose fin clipped and coded wire tagged by the Great Lakes Mass Marking Program in 2010. The Baird will continue to deliver lake trout yearlings to offshore sites in Lake Huron and Lake Michigan in 2011.

Lake trout will be produced at White River NFH until Allegheny NFH is functional again. With the assistance of NYSDEC, approximately 450,000 lake trout are scheduled to be stocked into the lower Great Lakes in 2011. Lake Erie is scheduled to receive approximately 100,000 - 160,000 yearlings, and Lake Ontario will receive the remaining fish. Because of egg import restrictions, only one strain, a Seneca hybrid from the Vermont hatchery system, is scheduled to be released in May 2011. Once again all yearlings will receive an adipose fin clip and coded wire tag. All stocking is currently scheduled to occur offshore.

Lake Trout Yearling Quality and Production Potential

In 2004, the USFWS adopted revised criteria for assessing the quality of propagated lake trout. Because rearing environments are unique at each hatchery, fish quality

targets for visceral fat, eyes, gills, and fins were established for each strain reared at Iron River NFH, Jordan River NFH, and Pendills Creek NFH. All fish stocked during 2010 met or exceeded the quality targets, although yearling size varied over time and across hatcheries during the season.

Existing capability allows the USFWS to rear some fall fingerlings in addition to our yearling lake trout. Our hatcheries were able to produce and stock 587,181 lake trout fingerlings in 2010 and could sustain that level during the next few years. Our hatcheries could eventually produce up to 950,000 fingerlings each year; however, this would require additional operational and new construction funding which is not currently appropriated. Since our production programs concentrate on yearlings, our ability to provide fingerlings is dependent on many conditions, and we cannot guarantee their availability.

Lake Trout Broodstock Management

Brood Stock Production Strains - Yearling lake trout stocked in the upper Great Lakes in 2010 came from three brood stock strains including: Superior Apostle Island (SAW), Lewis Lake (LLW), and Seneca Lake (SLW). Lake trout eggs for spring 2010 yearlings were provided by three USFWS facilities: Sullivan Creek NFH, Michigan (SLW); Iron River NFH, Wisconsin (SAW); and Saratoga NFH, Wyoming (LLW). In addition to these strains, the wild Lake **Superior Klondike Reef (SKW)** strain is maintained at Iron River NFH. A limited number of eggs were hatched this winter for yearling production in 2012.

Parry Sound Brood Stock Collected - The USFWS assisted the Ontario Ministry of Natural Resources (OMNR) in collecting gametes from wild **Lake Huron Parry Sound (HPW)** strain lake trout in 2005, 2006, and 2007. The gametes were taken to a quarantine facility in Chatsworth, Ontario, where they were held for pathogen screening. All groups met Title 50 health standards, which was needed to import them across the Canadian border. All three year classes have been transferred to the Sullivan Creek NFH. A portion of the new brood stock will be retained in the Ontario hatchery system for enhanced genetic fitness of captive Parry Sound brood stock. Eggs are anticipated to be available in 2011 for use in 2013 yearling stocking for the upper Great Lakes.

Klondike Strain in Isolation for Future Brood Stock Development

The USFWS and the Michigan DNR collaborated to collect Klondike eggs from wild lake trout at Klondike Reef in Lake Superior in 2009. Brood have been held in isolation at the Genoa NFH since. Disease testing and clearance is expected in late Spring 2011, after which these fish can be moved to broodstock facilities supporting both the upper and lower Great Lakes.

Lake Trout Health

Fish Health Screening - The La Crosse Fish Health Center conducts two fish health inspections each year at the six National Fish hatcheries in the Midwest Region. 4,200 tissue and ovarian fluid samples were screened for nine certifiable fish pathogens. No fish pathogens were detected. In 2010, 1,321 fish tissue samples were collected from fish captured in streams supplying water to Iron River NFH (Schacte Creek), Jordan River NFH (5 & 6 Tile), and Pendills Creek NFH (Videan's Creek, Pendills Lake) and screened for seven pathogens listed in the USFWS Aquatic Animal Health Policy and the Great Lakes Model Program. No pathogens were detected in facility water supplies.

Lake Trout Broodstock Health - Lake trout and brook trout broodstock held at Sullivan Creek NFH, MI and Iron River NFH, Wisconsin were specific pathogen free in 2010 (spring and fall fish health inspections were conducted).

Hatchery Construction Projects

Jordan River NFH - Projects include a new effluent treatment facility, a geothermal heating system for the main office and hatchery building, and a pre-engineered building over the main bank of raceways. In addition, a project to cover raceways 9 and 10 series with a pre-engineered building will be completed by 2011. Renovations are also being planned for the hatchery's water intake systems, with a design for these improvements expected by late 2011.

Pendills Creek NFH - Construction of a pre-engineered building to cover the new raceways was completed in November 2010. A new travelling screen building is nearing completion as part of an upgrade to the water treatment facilities. More renovations are being designed for the water treatment facility to include: new drum filters, ultra-violet light treatment systems, and new low head oxygen boxes. A contract for completing these improvements is anticipated by April 2011. A new early rearing building is being designed, and should be completed this spring, with a contract awarded by Fall 2011.

Iron River NFH - A new 3,600 gallon fish distribution tank and truck were purchased with GLRI funding. This unit is currently being constructed and should be on-line by June 2011. La Crosse FHC - Three new micro-labs were installed to enhance accuracy and volume of Polymerase Chain Reaction (PCR) based sampling/analysis.

Allegheny NFH - A \$1.68 million construction contract was awarded on March 12, 2010 to Wm. T. Spaeder Co., of Erie, PA. for the construction of a degassing/aeration tower. Construction began in June 2010 and is currently ongoing. The project is scheduled for completion on May 16, 2011 and remains on schedule. During the summer of 2011 additional projects will be completed at the hatchery. These include replacing 16 gate valves in the raceways, installing electric service to the raceway enclosures (which will facilitate the use of mass marking trailers), and a renovation of the settling pond to ensure that the facility will meet

NPDES permit requirements during the 2012 renewal cycle. We continue to expect a return to fish production in late 2011, with stocking re-commencing in Spring 2013.

White River NFH - will be installing a large oxygen cone system which will feed pure oxygen into the main water supply manifold. The purpose of the oxygen injection is to supplement the pumped well water, fed by four wells, up to full oxygen saturation. This will improve the water quality and increase overall fish production capacity at the facility.

Vessel Operations

Fish Distribution - The first distribution trip was conducted on April 7. In 2010, the Baird traveled 1,942 miles in Lake Michigan and stocked 2.7 million lake trout yearlings (not including shore plants) at 21 sites. In Lake Huron, the vessel traveled 754 miles and stocked 1.3 million lake trout yearlings at 8 sites. All 10 onboard fish tanks were treated with chlorine prior to the vessel traveling from Lake Huron to Lake Michigan to prevent the spread of invasive species or fish pathogens, such as VHSV.

Lake Huron Lake Trout Spawning Survey - During the fall of 2010, FWS using the Baird attempted to conduct lake trout spawning surveys at two offshore Lake Huron reefs- Yankee Reef and Six Fathom Bank Refuge. Due to high winds, the FWS was only able to assess Yankee Reef. Two gangs of gill nets were fished at previously established locations on the reef complex on Nov 1 & 2.

Relative abundance (CPE) of lake trout at Yankee Reef was 72.5 per 1000' of gill net. More importantly, the catch of unclipped, presumably wild lake trout captured at Yankee Reef was the highest on record (44.8%). A total of 26 unclipped lake trout were captured, and the CPE of unclipped lake trout was 32.5 fish per 1000' of gill net. A similar increase of unclipped lake trout was observed at SFB during the fall spawning assessment conducted in 2009. Although upward trends of wild lake trout are recent, the total catch of unclipped lake trout over the past four years (SFB and Yankee Reef combined) are the highest on record.

With each passing year, evidence of natural recruitment at these offshore reefs continues to become more apparent. The increases in relative abundance of unclipped lake trout at SFB in 2009 and Yankee Reef in 2010 provide a measure of encouragement for the USFWS' efforts towards lake trout rehabilitation in this region of Lake Huron. Spawning surveys at both reefs are scheduled for Fall 2011.

Great Lakes Mass Marking

The USFWS received \$1.7 million in FY08 and \$1.5 million in FY09 for the purchase of mass marking equipment. Those monies were used to purchase 2 Autofish trailers, 1 manual trailer, and to upgrade the electrical supplies at regional NFH's and at Marquette State Fish Hatchery. ✧

2010 Range of Ruffe in the Great Lakes

No range expansion was detected during 2010.

Lake Superior:

Lake Superior Ruffe range spans the entire south shore from the Duluth-Superior Harbor on the border of Minnesota/Wisconsin to Whitefish Bay, Michigan, and along the north shore from the Duluth-Superior Harbor to Thunder Bay, Ontario, Canada.

St. Marys River:

Ruffe remain undetected in the St. Marys River. Lake

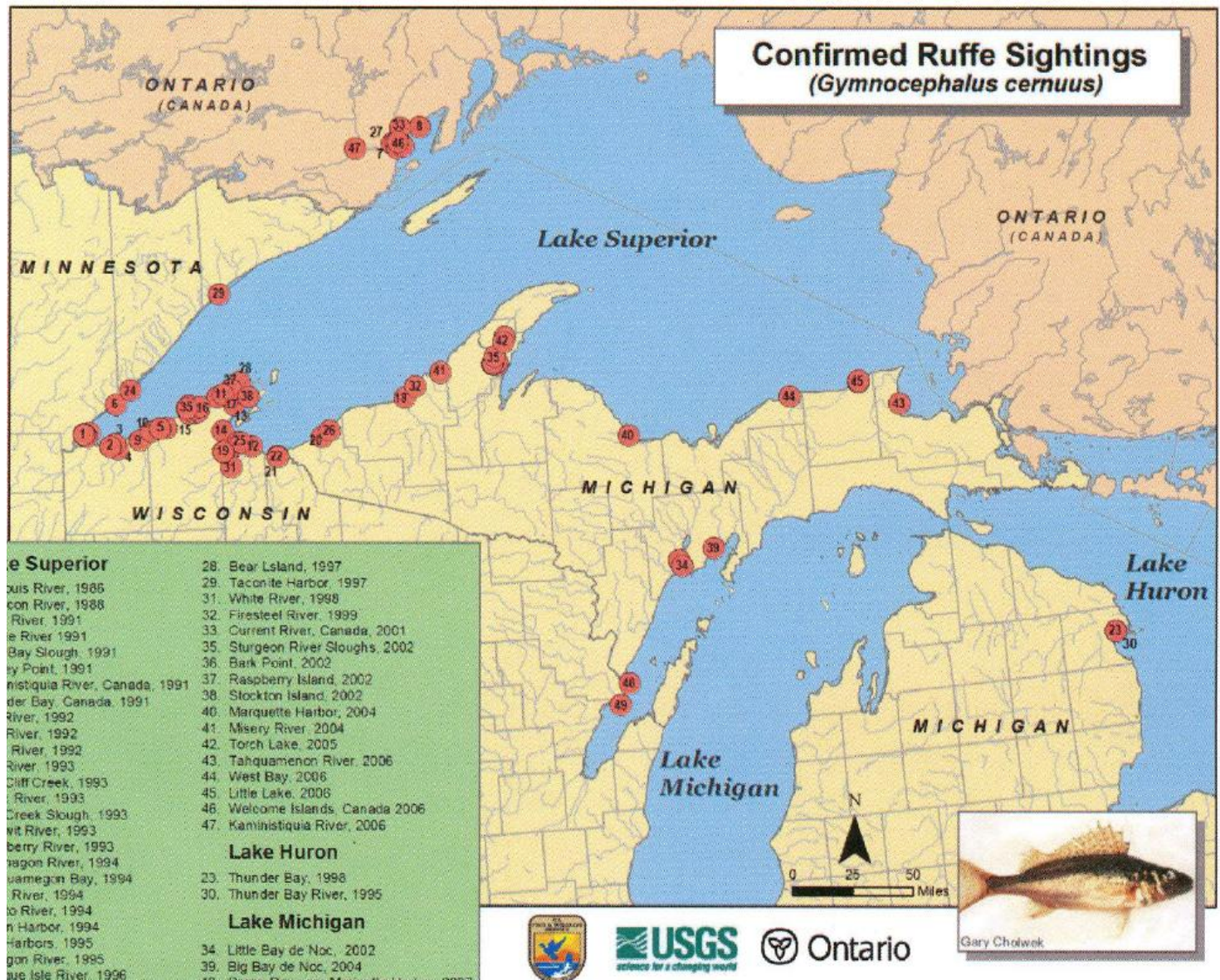
Huron: In the mid to late 1990s Ruffe were detected in one area of northwest Lake Huron- Thunder Bay (Thunder Bay River and Thunder Bay). Ruffe have not been captured there since 2003.

Lake Michigan:

The Ruffe range consists of the four locations in Green Bay.

Lakes Erie and Ontario:

Ruffe remain undetected in the Lower Great Lakes. Inland lakes and streams: Ruffe remain undetected from inland lakes and streams within the Great Lakes basin.



Locations where Ruffe have been detected in the Great Lakes

Other Breaking News Items:

(Click on title or URL to read full article)

Researchers test cannon to deter Asian carp

Researchers aim to test a "gun" that shoots pulses of water at high velocity in hopes to deter the invasive species from entering Lakes Michigan, Superior. The industrial strength water cannon creates enough energy to deter or even kill the fish and will be mounted near a lock in Chicago. The lock is at a critical

Asian Carp possibly hardier than once thought

New evidence indicates silver carp can eat cladophora, an algae species prevalent in the Great Lakes. Previous studies had concluded that for Asian carp to survive, they need plankton, which are scarce in the southern end of Lake Michigan. "It is worrisome," said Leon Carl, regional executive for the USGS...

Lake Michigan algae could be fodder for Asian Carp

New studies show Asian carp, which normally make their living sucking plankton, also have a penchant for noshing on the noxious algae blooms that have exploded on the lake bottom in recent years. Plankton populations in Lake Michigan have plummeted in the past decade

Great Lakes boats sales better than U.S.

While boat sales across the U.S. continued to decline in 2010, states in the Great Lakes region, including Illinois, saw increases that have helped keep the industry afloat.

MNR hopes anglers get hooked on new online tool

The Ministry of Natural Resources (MNR) has launched a new online tool to help experienced and aspiring anglers plan their fishing trips. The tool includes data about 13,000 Ontario lakes that was collected over a span of more than 50 years

Conveniently forgotten? Keeping carp out of the St. Croix River not a priority

If you're wondering how we got here — how it is, for example, that with little or no warning the entire Minnesota River watershed all the way to South Dakota has been ceded to an eventual invasion of Asian carp — you're not alone. You've got company as well if you wonder why the

Salmon fishery on the rocks

There's a decision looming for Lake Huron that would have been unthinkable 10 years ago. The state must decide whether it should keep putting Chinook salmon in the lake.

DNR resumes full-scale walleye production once again

After a number of years of reduced production and stocking of walleye, the Michigan DNR's hatchery system is going all in, once again.

Fish hatchery's big catch: High-tech upgrade

The recent multimillion-dollar renovation of one of Wisconsin's oldest active fish hatcheries is boosting survival rates.

New fishing license is boost to charters

The Ohio Division of Wildlife has established a new one-day fishing license, good anytime, though just once.

The Salmon Experiment: the invention of a Lake Michigan fishery

HASLETT — Howard Tanner knew the idea of introducing salmon into Lake Michigan was risky — even more so converting a dying commercial fishery into a sport fishery. But in 1964, Tanner, the new state fisheries chief, had just been told to "do something spectacular."

Mich. village: Close fish ladder because of carp

Officials with a southwestern Michigan village support the idea of closing a fish ladder on the St. Joseph River because of the threat from Asian carp.

Carp alarm sounds

A 27 lb bighead caught in the St. Croix River this week is a sign of a feared disastrous invasion. Conservationists said that the lunker probably swam upstream from Iowa and that there's no sign the carp are reproducing in Minnesota. Nonetheless, its arrival couldn't have occurred

Corps kept advisors in dark on barrier power

The U.S. Army Corps of Engineers declined to make public a report revealing that its electric barrier system is not operating at a level strong enough to repel all sizes of Asian carp, saying it would be released with a batch of related studies in late summer or fall. That embargo meant

Sea Lamprey control program funding spared

The sea lamprey control funding in the Great Lakes has been spared any significant cuts for this year. The Great Lakes Fishery Commission had been concerned that lamprey control would take a hit as Congress sought ways to reduce the budget. The House had voted to cut the

Quagga Mussels: 950 trillion tiny time bombs in our lakes

Parts of Lake Michigan are now clearer than Lake Superior. To see what Lake Michigan looked like 400 years ago, before Europeans arrived in this area, go to Big Sable Point in April or May and you can see it. For that, we can curse the 950 trillion foreign quaggas blanketing much

End