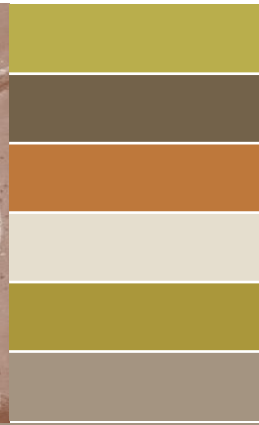


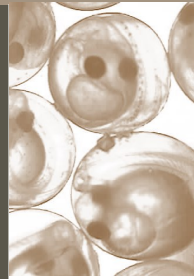
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Iowa Chapter of the American Fisheries Society

# Lateral Lines



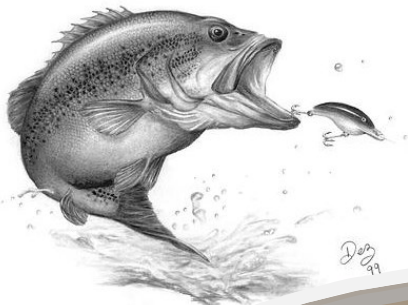
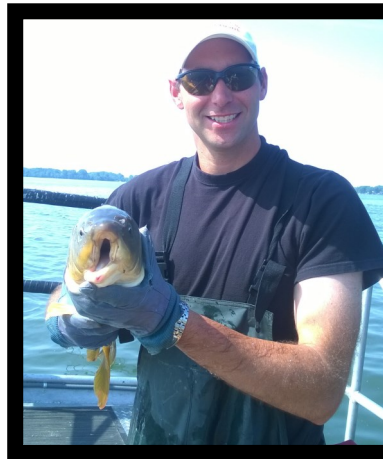
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**2016 Iowa AFS Election**

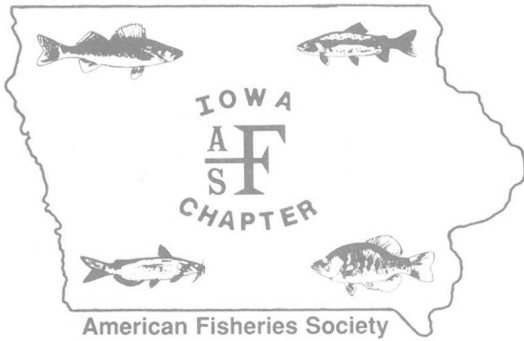
**President-elect & secretary/treasurer**

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### Our Mission:

To improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting the development of fisheries professionals.



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# Final thoughts from the President

Lewis Bruce

Prior to writing this article I opened the last issue of Lateral Lines and the final sentence in the President's Corner read something like, "Please help me welcome Jeff into his new position.....". If you look at the picture in this article you will see a tall figure with a full head of hair, not Jeff. Typically at this point in time we have already passed the torch. Instead, as you read this article the membership will be casting votes to choose a new president-elect position. After the votes are tallied and the position is filled Jeff will make the transition to president.

So, why did I mention the current status of the EXCOM? Everyone in the membership knows we need a new president-elect before we can fill the president's position. That makes sense and is required by the language in our bylaws. Another requirement to be on the EXCOM is being a member of the parent society, some of the chapter membership may or may not be aware of this rule. Right now we have approximately 100 chapter members which is great. We have enough money coming into the chapter to pay the bills, fund scholarships and fish related projects around the state. Chapter members that are also parent society members are not as impressive and currently number 30 with half of those being student members. These low numbers make EXCOM candidate selections diffi-

cult. Many of the current parent society members have sat on the EXCOM once if not multiple times for various positions. New EXCOM leadership can provide fresh ideas for projects and present new ways to improve membership numbers.

During my quest for president-elect candidates someone asked me, "What are the benefits of serving on the EXCOM?" Depending on the individual and their current level of experience the benefits can be huge from both a personal and professional level. For some the EXCOM is an opportunity to learn how a professional organization operates. For others this is a chance to show they can be successful in leadership positions. Young professionals are provided the opportunity to network and travel to meetings, these networking opportunities can be important for future project plans. Finally, positions are also a way to support AFS and make changes or provide input. Everyone has a full plate when it comes to work and they think next year will be a better time to serve. I have learned there will always be more work and there is no such thing as a best time to serve on the committee. Jump on the opportunity when it presents itself, don't wait. Most EXCOM members would tell future candidates they took away more than they expected from their term.

Again, I hope you welcome Jeff into his presidential position along with our new president-elect

In closing I hope everyone has a great fall surveying fish both on and off the work clock!

A handwritten signature in black ink that reads "Lewis Bruce".

# President's Corner

Jeff Kopaska

Last month I had the opportunity to attend the AFS Annual Meeting in Kansas City. It was good to see and hear so many students and professionals giving talks and presenting posters about their work. I gave a talk about the results of our fishing license marketing efforts over the last decade, which was part of a three day symposium entitled "An Examination into Influencing the Future of Angler Participation to Sustain Conservation Support." I spent much of my time at this symposium, and found out that many states are working on the same issues as we are. Here are some thoughts I jotted down along the way:

- Weather has an impact on fishing license sales in Iowa and other states, so what kind of impact can we expect climate change to have on future fishing license sales?
- What will anglers fish for in 30 years? Will we be able to get them to fish for what we want them to fish for? This comes from the unexpected rise of alligator gar to a trophy species in Texas.
- The quality and amount of fish available at a location can improve license sales.
- Georgia only sells fishing licenses from a web page, and as a result, they have email addresses for over 50% of their anglers. Emailing license renewal reminders is very effective for them.
- While Baby Boomers have been our funding mainstay for a couple of decades, Millennials (those born from ~1980-2000) are now becoming the most populace fishing license purchasers group in many states. Millennials love awards and competition, so things like Iowa's Master Angler program fit them perfectly.

A couple of other talks I attended that left me thinking were:

- Brian Graeb from SDSU is doing research trying to determine how much habitat needs to be added to a lake system in order to increase fish populations? Is 20% coverage in depths 15' or less adequate?
- A survey of agency fish websites for the Midwest revealed that Iowa's is the most complex, with readability at the 12<sup>th</sup> grade level. I responded by saying Iowa's are just smarter.

Attending a meeting like this, and having access to Fisheries and other AFS journals, are some of the perks of being a member of the AFS Parent Society. As Lewis Bruce pointed out in his President's Corner, we do not have a great representation of Iowa Chapter members in the Parent Society. We also have very few Certified Fisheries Professionals in our ranks. I leave you with the following suggestion for our Chapter, as incentives to boost both numbers. I would like you all to consider an increase in our Chapter dues from \$10 to \$20 or \$25, then use these

funds as an incentive for 1) any Chapter member who has not been a Parent Society member in the last 5 years can get a 50% refund on the cost of their first year of Parent Society membership; and 2) provide a refund at the AFS member rate for the initial application cost for certification. I think these efforts would positively influence our Iowa Chapter in strengthening the fisheries profession, advancing fisheries science, and conserving fisheries resources.

Jeff Kopaska



## 2016 President Elect: Jonathan Meerbeek



Jonathan received an AS in Environmental Science from Iowa Lakes Community College in 1999, a BS in Wildlife and Fisheries Science from South Dakota State University in 2002, and a MS in Biology from Tennessee Technological University in 2005. During school, he worked as a seasonal employee at the Spirit Lake Fish Hatchery and worked as a technician for graduate students and PhD students at SDSU. Jonathan began his professional career working as a Fisheries Specialist for the Minnesota DNR in 2004. He was promoted to Large Lake Fisheries Specialist in 2006

and worked as the project leader for Lake Pepin from 2006-2010. In 2010, he was hired as the Natural Lakes Research Biologist for the Iowa DNR where he has been working since. During his recent position, Jonathan has contributed 25 presentations at state, regional, and national meetings and has published 4 articles in peer reviewed journals.

## 2016 Iowa AFS Treasurer: Ryan Hupfeld

My appreciation for natural resources became apparent early in life with family outings of fishing, hunting, and just enjoying the outdoors while working on a small family farm in Iowa. I realized that I could have a career that I could enjoy as well as contribute in protecting and enhancing our natural resources in order for other people to enjoy as much as I do. As such, I began working summer positions for the Iowa Department of Natural Resources while completing an Associates of Arts and Science Degree in Natural Resources Management at Hawkeye Community College. I then transferred to Upper Iowa University and finished my Bachelor's of Science Degree in Conservation Management, also while working summer positions for the Iowa Department of Natural Resources. Following my undergraduate education, I attended graduate school at Southeast Missouri State University and graduated with my Master's of Natural Science degree in Biology. While attending school, I also worked for the Long Term Resource Monitoring Program for the Missouri Department of Conservation at the Big Rivers and Wetlands Field Station on the Mississippi River. During my time in Missouri, my research mainly focused on Paddlefish and Sturgeon management, along with a host of other research projects including work on Asian Carp, White Bass, Channel Catfish, Blue Catfish, American Eel, etc. Following my education and employment in Missouri, I worked for the Minnesota Department of Natural Resources working on a project to develop a potential tool for monitoring Cisco populations in inland lakes. Most recently, I obtained a position with the Iowa Department of Natural Resources as the Missouri River Fish Management Biologist.



I am currently a member of the American Fisheries Society, Student Subsection of the Education Section, Fish Management Section, and the Iowa Chapter. I am also currently a committee member on the Young Professional Committee of the Fish Management Section. Previously, I was a member of the Foundation Committee of the North American Sturgeon and Paddlefish Student Subunit and served as the vice president for Southeast Missouri State University Student Subunit. I have been a member of the American Fisheries Society since 2010 and would like to continue to be a contributing member of this important organization. As a fisheries employee with just over two years of full-time experience, I understand the importance of this position and would be honored to be able to continue to be actively involved in the Iowa Chapter of the American Fisheries Society.

# SAVE THE DATE!

## Iowa Chapter of AFS is planning its Annual Meeting at the Iowa Water Conference:

**Watershed Management: Partnerships for Progress**

**March 22-23, 2017**

**Scheman Building, Ames, Iowa**

The theme of the 11th annual Iowa Water Conference, “Watershed Management: Partnerships for Progress,” promotes water resource management from a watershed perspective, with a particular emphasis on the partnerships necessary to accomplish goals. Improving water management on a watershed scale is a complex undertaking due to the variety and sheer number of stakeholders. Watersheds do not adhere to political jurisdictions; they often cross borders of different cities of town, counties, and in some cases, states.

The conference planning committee is currently reviewing presentation applications to tell stories of successes and lessons learned through forged partnerships while providing updates on the latest technical approaches to water management from a variety of perspectives. The call for presentations submittal deadline was August 14, 2016. Applicants will be notified by September 16 of their application status. If you missed the deadline, but would like to be considered, please contact Melissa for more information. The call for presentations can be found at <http://www.water.iastate.edu/sites/www.water.iastate.edu/files/iowawatercenter/CALL%20FOR%20PRESENTATIONS.pdf>, and you can still submit an abstract at that link. We will also issue a call for papers for the Fisheries track of talks later this fall.

The Iowa Water Conference is IWC's largest outreach and collaboration effort. The conference is designed to bring together multi-disciplinary organizations and institutions to discuss relevant water issues in Iowa. The inaugural event in 2006 combined several existing conferences with the purpose of coordinating research and management efforts. Today's conference draws nearly 400 attendees and still strives to encompass the whole of Iowa's water landscape including expanding into realms of education and outreach, conservation, policy and regulations.

# A “Where’s Waldo” fish tale

Jonathan Meerbeek, Fisheries Research Biologist ~ Iowa DNR

I am guessing that most avid Iowa Great Lakes anglers have noticed something a little different in their catch over the past couple years. No, I am not talking about the size or abundance of the prized walleye or the mind-boggling numbers of panfish being harvested from the Okoboji’s, but I am talking about a less appreciated and less targeted species, the infamous white bass. Think back to your fishing days over the past few seasons and try to recall how many white bass you caught? I bet the answer for most of you is a big fat goose egg. Well you may be thinking to yourself that this disappearing act has been a Godsend – “all those pesky white bass do is steal my bait or get in my way when I am targeting a species that I want to eat!” Or, maybe you’re an angler that really enjoys the fast-pace action and trophy-size white bass angling opportunities that our local fisheries have offered in the past and are wondering when they will come back. Well, whether you like them or not, white bass have been an important component of these fisheries and have played an important role in structuring fish community dynamics. So, one has to wonder how long will this void of white bass last, and what, if any, effects will these changes in population abundance have on the future of our local fisheries?



Well, we as fisheries managers have been asking these same questions. But before we get into looking into possible answers to those questions, let’s take a step back and talk about what has happened to get us to the point we are at today – a fishery without white bass.

As some of you may recall, back in late September and October 2012, a large temperate bass (yellow bass and white bass) die off on the Okoboji Chain of Lakes occurred. Thousands, to tens of thousands of fish carcasses were scattered along the shorelines, piling up along the beaches of the windswept shores. The cause of the fish kill was undetermined but was assumed to be a viral pathogen. Later, in the spring of 2013, a net landed by a commercial fishing crew on Spirit Lake contained numerous white bass in a partially decomposed state. It was assumed that the Spirit Lake white bass population suffered from the same viral infection as did white bass from the Okoboji chain of lakes, but at the time, the extent of the fish-kills were largely unknown. DNR annual sampling in 2014 and 2015, which consisted of spring gillnetting, spring and fall electrofishing, summer seining, and summer trawling, collectively captured a whopping two white bass in the Iowa Great Lakes, both residing in Spirit Lake. No white bass have been captured in DNR sampling in the Okoboji chain since the spring of 2013. To put that into perspective, over 4,500 white bass were captured in gill-

netting alone back in 2011 and 2012 in the Iowa Great Lakes! Now, fisheries managers often preach about fish population fluctuations and that many species exhibit a “boom or bust” reproduction pattern, but rarely do we observe fish populations that “bust” and have no “boom” to back it up. Large white bass die-offs like these can have an impact on the overall white bass population but they usually recover quickly due to their high reproductive output. So naturally, these drastic changes in white bass abundance and lack of any signs of recovery were very interesting to us and deserved further evaluation.

To find answers to these and so many other questions, a simple google search was performed and I quickly found that white bass die-offs are not that uncommon and have occurred in natural lakes, rivers, and impoundments across the Midwest and several southern states. Six articles were found that talked about substantial white bass die-off events and most associated the fish kills to a combination of bacteria and warm water temperatures. However, none of these articles talked about the long-term effects of the fish kill on white bass populations or the overall impacts to the fishery. So, I took it upon myself to dig deeper into a couple of the stories to find out what has happened in those systems since the large-scale white bass die-off.

In the summer of 2005, Lake Oahe experienced a large-scale white bass die-off from bacteria that affects the gill filaments of the fish. Monitoring of the fish population following the die-off resulted in large decreases in abundance and angler catch rates of white bass. Although white bass were never absent from the population in subsequent fisheries surveys (as we documented in the Iowa Great Lakes), their abundance to this day has not recovered to pre die-off conditions (10 years later). Interestingly, since the white bass die-off in 2005, age-0 prey fish abundance has increased substantially.

Our neighbors to the north have also documented white bass die-offs on several lakes. Of most similarity to the Iowa Great Lakes story is Big Stone Lake located in west central Minnesota. According to fish survey data, white bass basically vanished from Big Stone Lake from 1987 to 1989 and were not captured again until 1996. White

bass slowly increased in abundance from 1996-2002 and finally increased to pre-die-off conditions in 2003, some 15 years post die-off! During this time period, Big Stone went through some very interesting changes in fish community structure and dynamics. Most notably, was the large increase in walleye numbers during the absence of white bass. Walleye abundance was on average three times higher from the late 1980s to the late 1990s! Both freshwater drum and yellow perch abundance also increased precipitously during this time frame, but both species experienced periods of high abundance following the return of white bass. Other fish species commonly caught in gillnets did not substantially fluctuate in abundance during the absence of white bass. However, gillnet catch rates are not a good indicator of fish species that belong in the Centrarchid family (bluegill, crappie, bass), so information regarding how these species could react during a void in white bass is relatively unknown.

As history has taught us, the white bass will return to the Iowa Great Lakes someday. In the meantime, something is going to fill the void of white bass within each system. Will it be walleye or will it be yellow bass.... only time will tell. In Spirit Lake, the stage has been set for the resurgence of walleye as the 2014 year class was tremendous and competition from other species appears to be low. In the Okoboji chain, the void may be filled by a variety of species, as the walleye, yellow bass, yellow perch, crappie, and bluegill all seem to be doing very well in the absence of white bass. All we can do at this point is sit back and watch the show as the changes take place. Sure, as managers, we can try to persuade the cast by stocking more walleye, but in large, the show's cast has already been determined. As angler's, it is our time to take advantage of the great fishing opportunities that exist now within the Iowa Great Lakes. Waldo will return someday and with it, bring back another type of fantastic angling opportunity. But until then, enjoy what Mother Nature has offered you and good fishing!



# Powered for life: Self-charging tag tracks fish as long as they swim

September 26, 2016

ScienceDaily®

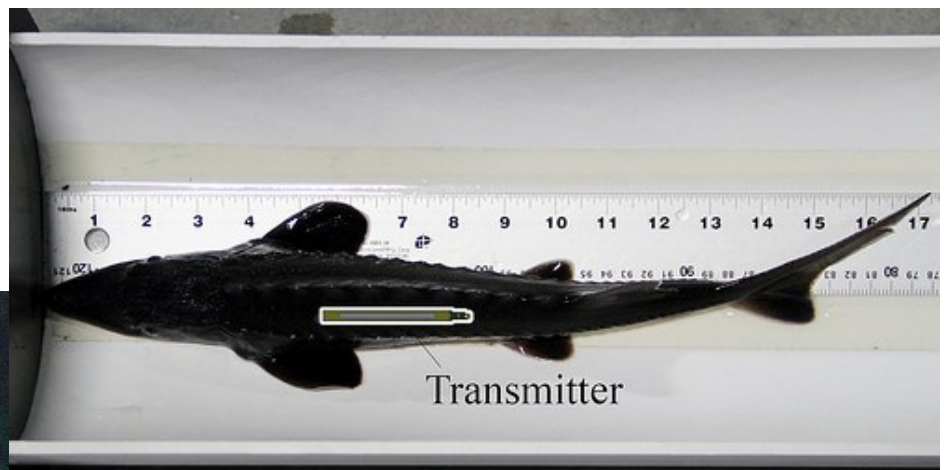
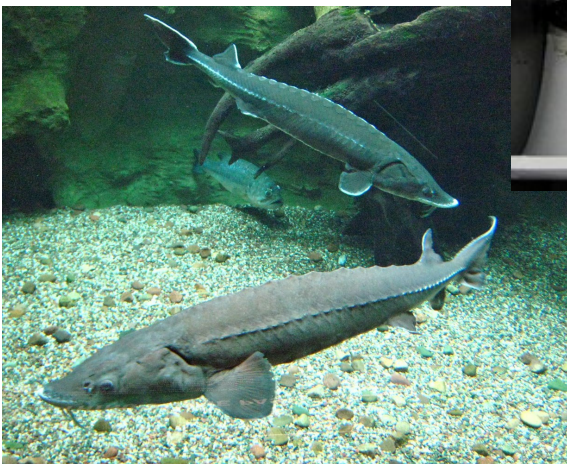
With each swish of a tail, scientists now have a tool that could study the movements of fish throughout their entire lives.

The Department of Energy's Pacific Northwest National Laboratory developed a self-charging tracking tag for fish behavioral studies. This new tag uses a flexible strip containing piezoelectric materials, which generate electricity through physical movement. The tags emit tiny beeps that are recorded by underwater receivers and are designed to track many different species of fish including long-living fish such as sturgeon and migratory species of concern such as eel and lamprey. It is described in the journal *Scientific Reports*.

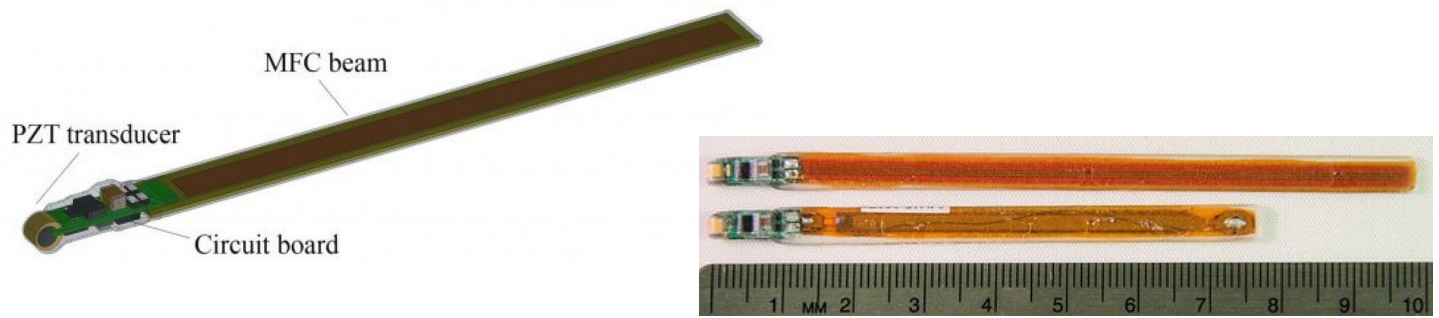
"Our self-powered acoustic tag can help us better understand how dams and ocean energy devices affect fish behavior," said the paper's corresponding author, PNNL chief scientist Zhiqun "Daniel" Deng. "Sturgeon are ancient fish and have been on this planet for millions of years. This tag can help us mitigate the impacts of human activities, and help these fish survive many more years."

A tag's ability to power itself is the latest upgrade to the Juvenile Salmon Acoustic Telemetry System, which PNNL has continuously developed since 2001 to evaluate how fish move near hydroelectric dams and other water structures. Researchers gradually made the system's tag smaller and more energy efficient, but it could only beep as long as the tiny battery inside it produced power. The tag's previous version typically lasts about 100 days. Now, the new tag is designed to work as long as the fish carrying it swims.

PNNL's self-powered acoustic fish-tracking tag is designed to track long-living fish such as sturgeon (below) throughout the course of their lives.



PNNL implanted its self-powered tracking tag into a juvenile sturgeon (shown above) and a rainbow trout, representing the first time a piezoelectric device was powered by a live fish. The surgery went so fast that researchers didn't have time to take a picture of the event. Shown here is an artist's representation of where the tag was implanted in the sturgeon.



NNL's self-powered fish-tracking tag comes in two lengths to accommodate differently sized fish: 100 and 77 millimeters, or about 11 to 14 grains of long rice placed head-to-head.

*Credit: Pacific Northwest National Laboratory*

Piezoelectricity is a hot area of research, with the self-charging materials being used to harvest energy from everything from insects to human joints. Deng and his team believe their tag is the first device to be powered by live fish.

PNNL's self-powered fish tag has three parts: a piezoelectric composite strip, a circuit board and a beeping transducer. The tag comes in two lengths to accommodate differently sized fish: 100 and 77 millimeters, making the total length of the tag about 11 to 14 grains of long rice placed head-to-head. The longer variety weighs about the same as a paper-clip, or 1.05 grams, while the shorter one weighs 0.80 grams.

Deng and his team initially tested the concept in the lab with a robotic fish tail. Next, the scientists tried it out in two live fish, a white sturgeon and a rainbow trout. They surgically inserted a tag just under skin near each fish's rear dorsal fins. The team watched the tagged fish swim in circular tanks equipped with underwater microphones, which picked up the tags' telltale beeps for the full two weeks the fish were observed. The tag did not appear to hinder either fish's swimming ability.

PNNL will test the self-powered tag outside of the lab for the first time next year. Tagged white sturgeon will be studied along the Columbia and Snake rivers in Washington state. The field research is being supported by DOE's Office of Technology Transitions in collaboration with industry partners.

Future development could also include determining the tag's optimal placement inside different fish species, which sizes of fish can be implanted with the device, and determining how the tag operates under high pressures.

The self-powered tag's initial development was supported with internal PNNL funding and DOE's Office of Energy Efficiency & Renewable Energy.

This week's paper describes a self-powered tag that charges a capacitor as the fish moves, and can only beep if the fish is moving. But Deng and his team have also developed another version with a small battery, which enables such a tag to beep more regularly and even if a fish is resting.

#### **Story Source:**

[Materials](#) provided by [Pacific Northwest National Laboratory](#).

#### **Journal Reference:**

Huidong Li, Chuan Tian, Jun Lu, Mitchell J. Myjak, Jayson J. Martinez, Richard S. Brown, Zhiqun Daniel Deng. **An Energy Harvesting Underwater Acoustic Transmitter for Aquatic Animals**. *Scientific Reports*, 2016; 6: 33804 DOI:[10.1038/srep33804](https://doi.org/10.1038/srep33804)

# Pool 12 Overwintering Stage I, Sunfish Lake Habitat Rehabilitation and Enhancement Project

Kirk Hansen, Mississippi River ~ Iowa DNR

On the Mississippi River, Habitat Rehabilitation and Enhancement Projects (HREP) are completed under the U.S. Army Corps of Engineers' Upper Mississippi River Restoration (UMRR) Program. UMRR is a partnership of federal and state natural resource agencies along the Upper Mississippi River and is comprised of two major elements: HREP and Long Term Resource Monitoring (LTRM). As program partners, the DNR is actively involved in the implementation of HREPs from project selection through construction and into project evaluation and monitoring.

Construction was recently completed on a HREP on Sunfish Lake. Sunfish Lake is located six miles upstream of Bellevue, IA in Pool 12 of the Upper Mississippi River. Sunfish Lake historically provided important overwintering habitat for many species of fish and was one of the original sites used to study Largemouth Bass overwintering requirements in the 1980's by the Mississippi River Investigations Team (Pitlo 1992). That study was instrumental in defining overwintering habitat needs and driving numerous backwater habitat rehabilitation projects. However, since completion of that study, the lake filled with sediment greatly reducing habitat quality leading to severe degradation of the fishery.

The Pool 12 Overwintering Stage I HREP featured over two miles of excavation channels to improve year round fish habitat (Figure 1). Excavated material was used to increase island elevations surrounding the lake. This served to decrease sedimentation delivery to the lake by reducing the frequency of overland flooding and allowed the planting of mast trees that are absent in much of the floodplain forest. Additionally, a rock closing structure was

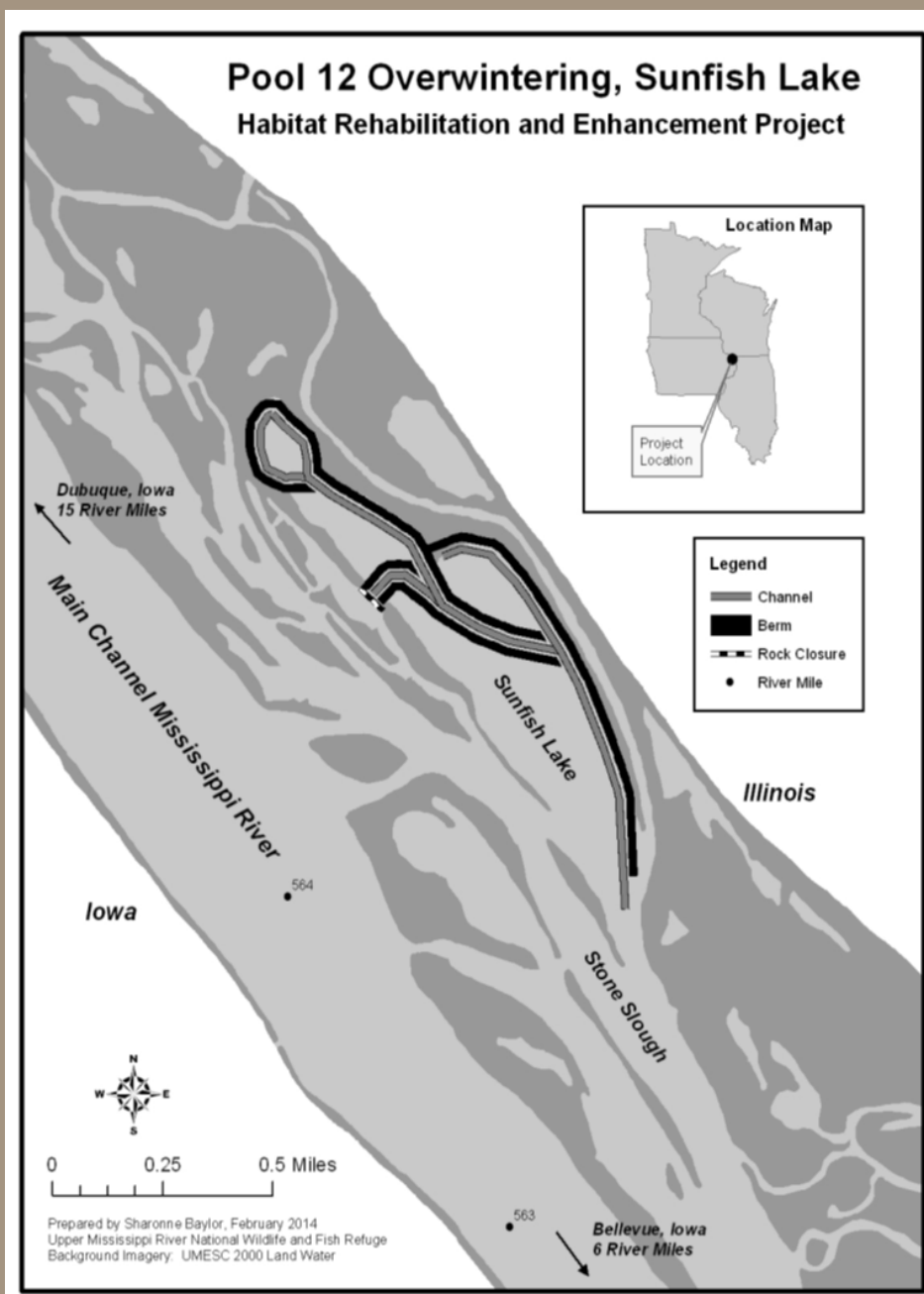


Figure 1. Pool 12 Overwintering, Sunfish Lake Habitat Rehabilitation and Enhancement Project.

constructed at the lakes inlet to reduce flows and sediment delivery into the lake (Figure 2). Aquatic vegetation responded immediately to the reductions in flow and turbidity with the establishment of diverse stands of emergent, floating-leaf, and submersed aquatic vegetation throughout the lake.

Beginning in 2006, Bellevue LTRM, Bellevue Fish Management, and the Mississippi River Investigation teams have partnered to conduct fisheries monitoring in conjunction with the Pool 12 Overwintering HREP (Hansen 2016). Electrofishing and fyke netting is conducted at multiple spatial scales to measure effects of habitat restoration. Additionally, Bluegill age structure, growth, and mortality are assessed annually at eight backwaters (four project backwaters and four controls). Focused sampling within individual backwaters illustrates how poor the fish population in Sunfish Lake had become (Figure 3). Continued monitoring will measure and assess growth and reestablishment of the population post-construction.

Over the next few years, three additional lakes in Pool 12 will be rehabilitated during Phases II, and III of the Pool 12 Overwintering HREP. Construction for Phase II – Stone and Tippy Lakes began in 2016 and construction for Phase III – Kehough Slough is scheduled to begin in 2017. Together, these projects will ensure quality fishing in Pool 12 for years to come.

#### Literature Cited:

Hansen, KA. 2016. Evaluation of Mississippi River habitat restoration projects. Federal Aid to Fish Restoration Study 7049. Pages 123-133 in 2016 Fisheries Research Section Annual Performance Report for Project No. F-160-R. Iowa Department of Natural Resources, Des Moines.

Pitlo, Jr. 1992. An evaluation of largemouth bass populations in the Upper Mississippi River. Iowa Department of Natural Resources, Federal aid to fish restoration completion report: Mississippi River investigations, Project F-160-R, Study 7021, Des Moines.



Figure 2. Rock closing structure designed to reduce flow and sediment delivery into Sunfish Lake.

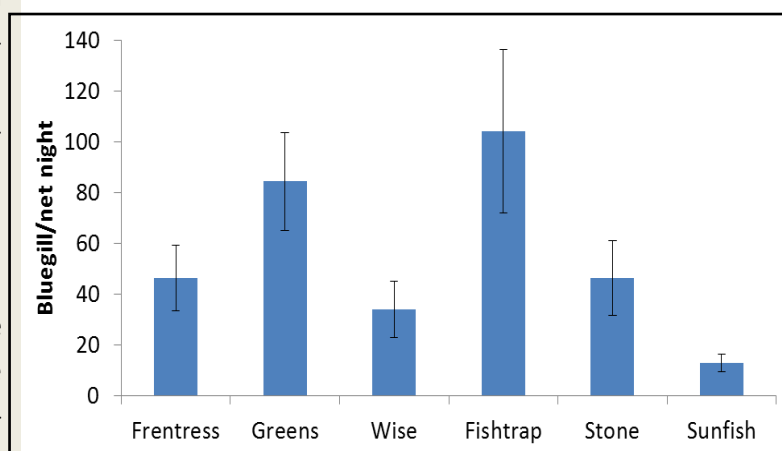


Figure 3. Mean (+/- 1 SE) Bluegill fyke net catch per net night for six lakes in Pool 12, Upper Mississippi River, 2006-2015.