



North Central Division American Fisheries Society



## Esocid Technical Committee

Chair – Jonathan Meerbeek (IA DNR; [jonathan.meerbeek@dnr.iowa.gov](mailto:jonathan.meerbeek@dnr.iowa.gov))  
Immediate Past Chair – Jonathan Meerbeek (IA DNR; [jonathan.meerbeek@dnr.iowa.gov](mailto:jonathan.meerbeek@dnr.iowa.gov))  
Chair-elect – Dave Woods (MDC; [Dave.Woods@mdc.mo.gov](mailto:Dave.Woods@mdc.mo.gov))

### 2012 Winter Business Meeting Minutes

*73<sup>rd</sup> Midwest Fish and Wildlife Conference, Hyatt Regency, Wichita, KS, December 9-12*

The following notes highlight discussions from the ETC business meeting held 9 December 2012 at the Hyatt Regency. ETC members in attendance at the business meeting were D. Woods, R. Pawlak, S. Gilbert, and J. Meerbeek.

Summer Minutes and Update to North Central Division (NCD): No corrections were made to minutes from the July 2012 ETC meeting. Those meeting minutes were provided to ETC members on 6 August 2012. In November, Jonathan Meerbeek provided an Annual Report of ETC Activities to the NCD. The report follows a new format from the American Fisheries Society (see Appendix).

Sales of the International Pike Symposium: There is a balance of \$1,365.50 that we owe to the NCD for the \$5,100.50 we borrowed to publish the book in 2008. Ten copies are still available for purchase @ \$30/copy and have been advertised on the ETC website.

Past and Future Leadership: Jonathan Meerbeek's 2-year term as ETC Chair will end in December. Dave Woods ([Dave.Woods@mdc.mo.gov](mailto:Dave.Woods@mdc.mo.gov)) will be the new ETC Chair for 2013-14.

Themes/Location/Dates for 2013 Summer Meeting: Committee members agreed to continue the joint technical committee meeting format for next year's meeting. Meeting theme was not discussed. ETC members attended the WTC meeting to discuss the summer meeting location. Stoney Creek Inn in Wausau, WI was offered as a meeting location (see Appendix). Some members expressed concern about hosting the meeting in Wisconsin again (four out of five most recent meetings have been in WI). It was agreed upon that since the WTC chair (Dan Isermann) has primary responsibility to organize the meeting that the meeting location shall remain within the chair's state. It was also suggested that the WTC chair-elect should reside somewhere other than WI to allow more states to be involved. Member suggested that the next meeting location (summer 2014) should border two or more states to allow maximum participation.

Workshop ideas were also discussed. Those suggested were: Fish ID course (J. Lyons, etc.); Age-Growth; molecular techniques/genetic analysis (Sloss; VanDeHey); and broodstock management

Budget: The ETC account (managed by NCD Treasurer Jason Goeckler) had a balance of \$2,451.38 through 31 October 2012. Since the summer meeting, the ETC account has had additions of \$289 (for the R workshop) and \$11.04 (interest).

### New Items:

Muskies, Inc. will be sponsoring the 2016 Hugh C. Becker International Muskie Symposium in March 2016 in the Twin Cities area. There will be various committees established including a Technical Steering Committee, and an Advisory Committee which will consist of key industry leaders, DNR personnel and managers, noted muskie researchers and educators, and public relations individuals.

### Website Items:

#### Chapter Representatives – Updates

- Dakotas: Steve Chipps
- Illinois: Steve Pallo
- Indiana: Chair (2007-2008), Ed Braun
- Iowa: Chair (2010-2012), Jonathan Meerbeek
- Kansas: Jeff Koch
- Michigan: Chair (2008-2009), Jim Diana
- Michigan: Kregg Smith
- Minnesota: Chair (2009-2010) Rod Pierce
- Missouri: Dave Woods (chair-elect)
- Nebraska: Keith Koupal
- Ohio: Curt Wagner
- Ontario: None (Steve Kerr retired in 2012)
- Wisconsin: Jordan Weeks

#### New Project Ideas:

None discussed.

#### State and Provincial Reports:

##### **Dakotas** (B. Blackwell)

##### North Dakota

Northern pike numbers throughout the Missouri River reservoirs in North Dakota remain exceptional. In fact, Lake Sakakawea's northern pike CPUE in 2012 was nearly twice the previous record (2011). The CPUE of 2012 represents the highest value since Garrison Dam was closed and can largely be attributed to the 2009 year class. If adequate prey conditions persist, Lake Sakakawea should again be a trophy pike destination in a few more years.

##### South Dakota

Despite the 2012 drought, northern pike continue to prosper across eastern South Dakota. High water levels of previous years have led to increased northern pike abundance across eastern South Dakota. However, reductions in water levels as a result of the ongoing drought may reduce future northern pike recruitment.

Anglers in South Dakota will be allowed to darkhouse spear northern pike in 2013. Spearing, bow fishing and underwater spearing for northern pike will be allowed on all inland waters from June 15 - March 15 except where muskellunge are managed. On a similar note, North Dakota already expanded darkhouse spearing for northern pike to all waters in 2012, with the exception of lakes having muskellunge and the Red River.

Blue Dog State Fish Hatchery had an exceptional year in 2012 at growing muskellunge and survival at the hatchery was high. Juvenile muskellunge were again provided to South Dakota by the Iowa Department of Natural Resources in late June when they were at a size of approximately 80 fish/lb. In all, 4,677 muskellunge averaging 12 inches were harvested from two hatchery ponds and stocked into three lakes (West 81, Amsden and Lynn).

The apparent illegal stocking of several fish species continues to impact Black Hills fisheries. Anglers have reported catching northern pike in several waters and department netting and electrofishing activities have resulted in the collection of pike throughout the Black Hills. Two waters, Sunday Gulch (0.8 ac) and Dumont Pond (0.9 ac) were sampled in 2012 due to reports of northern pike being caught by anglers. Netting in Sunday Gulch caught 12 northern pike and netting and electrofishing resulted in nine pike from Dumont Pond. In Dumont Pond, several of the fish were age-0 indicating successful reproduction in the headwaters of a popular trout stream. Plans are to continue to sample and remove northern pike collected from these small waters that are currently managed as put-and-take rainbow trout fisheries.

Dave Lucchesi evaluated the importance of stocked adult northern pike in urban fisheries in five small lakes in the Brookings, South Dakota area during 2009 - 2011. Northern pike were found to be an important component of these urban fisheries. A short description of the study and results can be found in the appendix.

**Illinois** (S. Pallo) – No State report provided.

**Iowa** (J. Meerbeek)

Ten lakes and impoundments are currently being managed as muskellunge fisheries. In lakes where muskellunge are used as broodstock, populations are monitored via annual spring gillnetting and population metrics are estimated using the Jolly-Seber model. In 2012, 388 muskellunge were captured (165 recaptures) ranging from 26-51 inches in these lakes. Adult ( $\geq$  30 inches) muskellunge population estimates for 2011 in the Spirit Lake/Okoboji Chain and Clear Lake were 0.09 and 0.08 fish/acre, respectively. Currently, only spring-stocked, minnow finished yearlings (SY) are used in Iowa's muskellunge culture program. Previous research has found that these fish survival much better than fish stocked in the fall (FF) or fish stocked in the spring that were fed different diets. However, current research has also indicated variable survival to age-4 for SY. Overall, SY survival to age-4 varied substantially among years (8.3-52.6%). Individual cohort SY survival was either good (42.1-52.6%) or poor (8.3-21.5%) and occurred at a ratio of 1:3. Although survival rates for SY muskellunge were considerably better than fall stocked minnow-finished fingerling (FF; 2.5-20.9%) muskellunge, inconsistent SY and

adult (60-95%) survival limited adult recruitment into the population. Using these data, a model was developed that incorporated variable FF, SY, and adult survival to predict adult densities at various stocking rates and frequencies. Based off model iterations, 2.5 times more FF than SY are required to meet management objectives. In addition, stocking SY annually increased the probability of meeting management objectives. Cost analysis based on survival to age-4 revealed a 35% cost savings in stocking SY as opposed to FF. Based on these findings, more frequent stockings and more (24-33%) SY are required to meet muskellunge management objectives in Iowa.

All yearling muskellunge stocked into Iowa's natural lakes are tagged via PIT tags prior to stocking. Information regarding growth, survival and recruitment will help guide stocking rates to maintain desired population levels.

Emigration has been a concern in the past for the Spirit Lake/Okoboji system and Iowa's muskellunge reservoirs. Due to the infestation of silver and big head carp and pressure from local residents and business owners, a physical barrier has been constructed in the outlet to prevent additional Asian carp from entering the Spirit Lake/Okoboji system. This physical barrier was removed this fall and an electric barrier construction has begun. Total project cost is \$961,000 (Engineering and construction oversight - \$118,000 and Construction - \$843,000). This project has been a model of local and regional support with \$400,000 contributed through local fundraising, \$300,000 from the DNR (MFT funding), and \$261,000 from the Minnesota DNR through the Minnesota Outdoor Legacy Fund. Project will be completed by spring 2013. The electric barrier most likely will prevent additional muskellunge emigration, but since the construction required that the electrical field is downstream of the existing dam (apron attached to existing dam), its effectiveness as a downstream migration barrier needs to be tested.



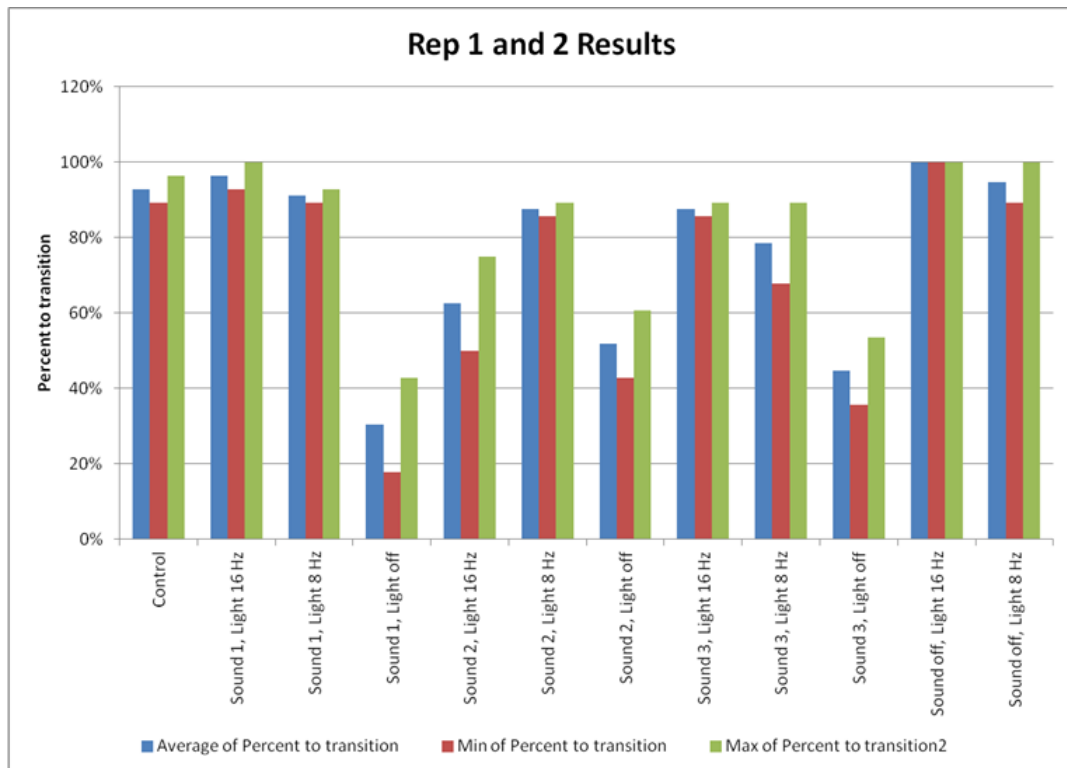
Electric barrier construction on Lower Gar outlet (Spirit Lake/Okoboji chain of lakes)

A physical fish barrier has been constructed at one of our small impoundments, Big Creek Lake. The Iowa Department of Natural Resources (IDNR) Boone Fisheries Management team has been monitoring the muskie and walleye populations at Big Creek since 2006. Sampling results indicate that the muskie population dropped significantly in 2007. The IDNR speculates that this was due to the outmigration of muskie over the spillway. In 2007, intense spring rains and high discharges coincided with the muskie spawning period (April). Adult muskie are often found in shallow water, searching for quality spawning habitat this time of year. It's likely that these fish could have been swept away with the strong current at spillway while "cruising" the shoreline. More evidence of fish outmigration was discovered when two adult walleye that were tagged at Big Creek Lake in 2010 were caught by anglers later that summer in the Des Moines River system. One tagged fish passed over the Big Creek spillway and also through the Saylorville Dam, before it was caught in the Saylorville tailrace. The other tagged fish passed over the Big Creek spillway and then migrated nearly 100 miles up the Des Moines River before it was caught below a dam in Fort Dodge.

Fish outmigration from lakes is quite common; however it can reduce angling opportunities and create difficulties for fisheries managers, particularly with stocking recommendations. Fortunately, the IDNR discovered a similar issue and a potential solution in Illinois. The Illinois Department of Natural Resources Fisheries staff observed significant muskie outmigration at Kinkaid Lake in the mid 90's. In response, they installed a horizontal bar style fish barrier in 1998 to prevent adult muskie from passing over the spillway. Illinois Fisheries staff is pleased with the barrier and they have been able to reduce the muskie stocking density at Kinkaid Lake by nearly 30%. The IDNR Fisheries & Parks staff partnered with the U.S. Army Corps of Engineers at Saylorville, Central Iowa Anglers, Recycled Fish and other volunteers to install a similar fish barrier at the Big Creek spillway in July. The barrier is 29" tall and consists of 1 5/8" bars mounted in a horizontal fashion, with a 2" gap between each bar. The barrier was designed to keep adult muskie from swimming over the spillway, however it should prevent larger walleye (>17") from leaving the system as well. Test section results and personal communication with Illinois Fisheries staff indicate that vegetation from the lake should pass through the barrier, but IDNR staff will routinely monitor and clean the barrier.



A laboratory study has been initiated to evaluate the effectiveness of light, bubbles, and sound as a deterrent for walleye emigration in reservoirs. Preliminary results suggest that the barrier without lights deters walleye better than with light trials; however, there is a fair amount of variability in the minimum and maximum values for this treatment. This study is should be completed this winter.



Northern pike are propagated and stocked as either fry, 2-3 inch fingerling, or as advanced (late summer/early fall) fingerling in Iowa's lakes, reservoirs and rivers. No formal research project evaluating the contribution of stocked northern pike has been completed in lakes, but recent stocking investigations on a 1,100 lake indicate that fry and 2-inch northern pike survival is very low, whereas the advanced fingerlings survival is high. However, production facilities to raise substantial numbers of advanced northern pike fingerlings is lacking, thus limiting the research potential.

Mississippi River Northern Pike Study - This telemetry study was undertaken in order to identify and quantify the physical and chemical characteristics of habitat used by northern pike in the Upper Mississippi River. Twenty pike were radio transmitted within the Sny Magill Bottoms complex in Pool 10, in October 2011. Pike overwintered in off-channel backwater lakes with characteristics consistent with those identified as critical for Centrarchid overwintering (depth  $\geq 1$  m, no flow, O<sub>2</sub> > 4 mg/l; Steuck 2010). As river levels rose in the spring and remained high through the early summer many pike moved into shallow flooded terrestrial areas. As water levels have dropped and water temperatures moved into the 80's, pike

began to move to areas with cooler water such as areas with springs or into cold water tributaries. We will continue to track these fish for the next couple of years in order to determine seasonal movement patterns. An additional 40 northern pike will be transmittered in Pools 10 and 13 in October 2012. Information gained from this study can be used in the design and construction of future habitat rehabilitation and enhancement projects on the Upper Mississippi River. For more information contact Kirk Hansen ([Kirk.Hansen@dnr.iowa.gov](mailto:Kirk.Hansen@dnr.iowa.gov))

Iowa's muskellunge management plan is still being developed. A comprehensive literature search has been conducted and the plan is nearing completion.

**Indiana (D. Kittaka) –**

**Indiana Division of Fish and Wildlife, Clear Lake and Hamilton Lake Fisheries Activities in 2012. Steve Donabauer, Fisheries Research Biologist, Indiana Department of Natural Resources**

Northern pike were sampled in March 2012 at Hamilton and Clear lakes by the Indiana Division of Fish and Wildlife (DFW). The purpose of the project was to determine if trap nets would be an effective technique to capture pre-spawn pike and to summarize pike population statistics. From March 5-15, 2012 the DFW captured, marked, and released 935 pike at Hamilton and 66 pike from Clear. Hamilton Lake pike averaged 23.6 inches (range: 18.0 to 33.5 inches) while Clear Lake pike averaged 25.4 inches (range: 11.3 to 40.4 inches).

Hamilton and Clear lakes were chosen for this project since they have traditionally supported two very different pike populations. Hamilton is known for abundant pike while Clear is known for the large pike it produces.

DFW biologists also set several gill nets in Hamilton Lake from April 9-11, 2012 to estimate the size of the pike population based on the number of marked pike collected in March. The population estimate suggested that there are approximately 5,500 legally harvestable-size (20 inch minimum length limit) pike in Hamilton Lake, or 7 pike per acre. Not enough pike were collected at Clear to estimate the population. In the laboratory later this year, DFW biologists will estimate age and growth rates of pike by analyzing small cross sections of fin ray samples that were also collected during the survey. Over the next three years, DFW biologists will compare the Hamilton and Clear lakes pike population statistics to pike populations among several other lakes in Steuben, LaGrange, and Kosciusko counties.

A 2012 summary report will be completed by the end of the year. Steve Donabauer, DFW fisheries research biologist, can be reached at [sdonabauer@dnr.IN.gov](mailto:sdonabauer@dnr.IN.gov) or 260-244-6805 for pike related questions or concerns.

**Indiana Muskie Broodstock collection and spawning 2012 Randy Lang, Hatchery Supervisor, Indiana Department of Natural Resources**

In 2012, muskie broodstock collection and spawning was about 2-3 weeks ahead of the normal schedule. Egg quality and hatchery performance of muskie from the 2012 spawn has been normal and stocking goals are expected to be met.

### **Ball State University to study a new Muskie lake in Indianapolis, IN.**

Predator Interactions in Eagle Creek Reservoir, 2011-2016, A Research Proposal, Thomas E. Lauer, PhD Ball State University, Muncie, IN 47306 TX: 765-285-8825  
Email: tlauer@bsu.edu

The goal of this study is to determine whether muskellunge will have an impact on the fishery. The specific objectives include:

1. Determine whether changes in predators, panfish and gizzard shad abundance and length frequency distributions are observed following muskellunge stockings. Our hypothesis is that the community structure of Eagle Creek will be positively affected by muskellunge due to a reduction in gizzard shad biomass through predation, promoting panfish growth and abundance.
2. Determine whether changes in largemouth bass abundances, ages and length frequency distributions are observed following muskellunge stockings. Our hypothesis is that muskellunge will share the role as a predator with largemouth bass, rather than replacing or inhibiting this fish in Eagle Creek Reservoir.
3. Determine whether net size and type, and sampling times influence ages-0 to 4 muskellunge catch rates. With this objective, we hypothesize that type of gear or time of deployment may influence the size or age of muskellunge captured.
4. Determine the age, size structure, and abundance of muskellunge in the lake for the period 2012-2016. We hypothesize that each year class will be represented with annual, consistent stocking efforts and that by year 2016, the earliest stocked fish may be entering the fishery.

### **Indiana DNR proposes to host Muskie Summit in 2013**

#### **Bill James, Chief of Fisheries, Indiana Department of Natural Resources**

There are two chapters of Muskies, Inc. in Indiana and an excellent working relationship exists between these chapters and the Division of Fish and Wildlife (DFW). The DFW would like to further enhance this partnership and also provide additional opportunity for public involvement regarding Indiana's muskie management. To this end, the DFW is exploring possibilities for a "Muskie Summit" in early 2013.

The meeting purpose would be to:

1. Maintain cooperative partnerships with muskie anglers, guides, and muskie organizations by fostering effective communications with anglers.
2. Provide updates on Indiana's muskie management/research and hatchery programs.
3. Provide a facilitated forum to discuss topics, questions, and issues of interest among anglers.
4. Prepare a summary of comments and suggested action items.



## **Kansas (J. Koch) –**

Kansas currently manages northern pike in one lake. Warm water temperatures this past summer had caused a major northern pike fish kill. Kansas is interested in restocking the lake to provide Kansas anglers with a unique opportunity to fish for pike.

## **Michigan (K. Smith) –**

### Michigan Chapter Report

Kregg Smith, Michigan Department of Natural Resources

Michigan will be partnering with various geneticists and scientists around the Great Lakes to investigate muskellunge genetics in a study titled: Delineation of natural boundaries of muskellunge in the Great Lakes and the effects of supplementation on genetic integrity of remnant stocks. The project will standardize DNA sampling to compare population genetics across the Great Lakes basin. A broader understanding of genetic differences among most major Great Lakes spawning aggregates is lacking, and needed for restoration efforts. The authors speculated that genetic diversity would be hierarchically structured as a result of philopatry and habitat constraints that affect levels of movements among populations. Their objectives are to: (1) build on existing genetic data to determine if significant genetic structure exists among muskellunge spawning aggregates across the Great Lakes and their tributaries; (2) determine if significant admixture is present in Great Lakes muskellunge populations consistent with introgression between stocked and resident Great Lakes muskellunge; (3) determine if levels of admixture are correlated with numbers of stocking events; and (4) determine if the genetic structure of non-admixed Great Lakes muskellunge populations is consistent with a genetic stock model that can be described in terms of genetic stock identification and degree of stock isolation. To accomplish these objectives, the authors proposed to take advantage of existing genetic database (14 microsatellite loci) and genetically characterize spawning populations of Great Lakes muskellunge (BS). Combinations of traditional genetic diversity measures, clustering algorithms, and Bayesian analyses will be used to estimate the number and spatial distribution of genetically distinct groups, as well as for evidence of population admixture and interbreeding between various strains (All). They plan to deliver a progress report and two peer-reviewed manuscripts, and a final report that includes guidelines for Great Lakes muskellunge stocking including identifying priority brood sources.

Michigan DNR completed its second year of rearing and stocking Great Lakes strain muskellunge from the Detroit River/Lake St. Clair. This year a total of 28,177 fall fingerling muskellunge were stocked in 17 different waters across Michigan. The average size of stocked fish was larger than in 2011 at 10.9 inches. An additional 3,000 Michigan Great Lakes strain muskellunge were supplied to the Wisconsin DNR to establish their broodstock lakes.

New muskellunge regulations will be implemented on April 1, 2013. Muskellunge statewide regulations will remain at a minimum size limit of 42 inches, but the possession limit will be reduced to one fish per year and enforced with the use of a possession/harvest tag that must be attached to any muskellunge taken from Michigan waters. Biologists are currently considering and discussing with the public new minimum size limit regulations for specific waters to be added into regulations for a 46 and 38 inch size based fishery.

New northern pike regulations will also be implemented this year. Minimum size limit of 24-inches and possession limit of 2 northern pike will be retained for most waters. No minimum size limit regulations have been modified to include a possession limit of 5 northern pike of which only one may be greater than 24 inches. A protected slot limit will be added for six waters in the state. Protected slot limit (PSL) regulations will be implemented where the possession of northern pike would be prohibited from 24 to 34 inches and the possession limited of 2 fish. A 30-inch minimum size limit regulation will be removed from 8 listed waters in the state. The statewide 24-inch MSL for northern pike is biologically conservative and assures near optimum reproduction in most southern low density populations. However, improvements in size structure have not been realized in several northern Michigan waters. We found that the no-MSL regulation has not improved the size structure in populations with high density and below-average growth, but it has allowed high catch rates to occur, as was found in historic regulation evaluations by Latta (1971) and Schneider and Lockwood (1979). The main difference in the proposed regulations is the 24- to 34-inch PSL regulation and removal of the category for the 30-inch MSL regulation. This new regulation provides a tool for managers to potentially re-structure northern pike populations by simultaneously allowing harvest of smaller fish and protecting larger fish that are highly vulnerable to harvest. The no-MSL regulation is proposed to be modified to retain the possession of 5 fish but with only one fish greater than 24 inches. A few anglers commented that they preferred to preserve their fishing heritage on these types of populations.

Several case studies are underway in the state. Stocking evaluations are being conducted on Kingston Lake to determine the survival of muskellunge with a reduction in surface area of the lake because of low water levels. Population assessments will be conducted in the Tahquamenon River system to support previous studies that documented movement and growth of the muskellunge population. There is a northern pike adult rearing operation starting in 2013 on Sanford Lake marsh to place adult fish in the marsh and harvest fingerlings for stocking. Michigan DNR has a long tradition with this field operation of marshes, but since VHSV issues have arrived in the Great Lakes region this practice was put on hold. Evaluations of stocked muskellunge will be conducted across the state at waters with low and high exploitation.

## **Minnesota** (R. Pierce) –

A study of habitat overlap among species in a coolwater fish community was continued in Elk Lake, Itasca State Park, in spring 2012. Ultrasonic transmitters were implanted in muskellunge, northern pike, walleye, and ciscoes, whose temperatures and depths will be transmitted to an array of automated hydrophones in the lake. Fish movement in relation to light levels in the water column is one interesting aspect of the work being conducted this summer. Researchers are Andy Carlson, Jerry Younk, and Peter Jacobson. Elk Lake is also the site of a long-term muskellunge PIT tagging study by Jerry Younk.

A study of northern pike thermal habitat is wrapping up this year. Archival tags recording fish temperatures and depths were recovered from 20 northern pike during spring and summer 2012 in Shingobee Lake. Thirty six pike were originally implanted with the archival tags in spring 2011. A final report should be completed this winter.

A long-term tagging study focusing on northern pike growth and angling vulnerability is being conducted out of a USGS research station at Shingobee Lake. An analysis of catch-and-release fishing from this study has been submitted to the North American Journal of Fisheries Management. Researchers are Bruce Carlson, Dallas Hudson, and Rod Pierce.

A new book titled “Northern Pike Ecology, Conservation, and Management History” by Rodney B. Pierce, University of Minnesota Press, was published in August. The new book summarizes historical and current scientific literature on the ecology and sampling of northern pike populations, documents the long history of northern pike management, and describes the latest efforts to manage recreational fisheries for the species. The book is available through the University of Minnesota Press website, Amazon.com, and other booksellers. Visit: <http://www.upress.umn.edu/book-division/books/northern-pike> for more purchasing info.

## **Missouri** (C. Fuller; D. Woods) –

### **A Closer Look at Limiting Factors to Managing Muskie in Missouri**

Muskie are not native to Missouri. Being located at more southern latitudes than their native range, muskie in Missouri are subjected to regional environmental stressors. During summer, it is possible that combinations of thermal stratification and high water temperatures constrain or eliminate availability of quality muskie habitat. Previous studies have found that during the summer in lakes at southern latitudes, adult muskie typically seek water temperatures of about 78°F. Adult muskies prefer progressively lower water temperatures as their age and size increase. Thermal stratification occurs in Pomme de Terre Lake throughout the summer; a strong thermocline develops at approximately 12 – 15 feet by June. Water temperatures are at their

highest levels during late-June and persist through mid-September, and dissolved oxygen is often insufficient at depths where temperatures are optimal or preferred by muskie. Since the muskie's upper lethal limit is near 86°F, these conditions potentially create a thermally stressful environment for Pomme de Terre Lake muskie. This year, in an effort to collect information on regional environmental stressors that may play a role in limiting factors to muskie management potential in Missouri, we have collected oxygen and temperature data during June, July, August and September from all five lakes managed for muskie. Although data from each lake is slightly different, the concern is where oxygen levels are suitable to sustain life (>4 mg/L) the temperatures are warmer than optimal conditions and in some cases high enough to be stressful (> 80oF).

Missouri is currently summarizing muskie genetic strain evaluation data that has been collected over the past several years. Early analysis of the data has proven difficult given very low sample sizes of recaptured fish. This has led to high variability in the data and large margins of error. The report is projected to be complete by the end of the year.

In October 2012, the muskie stocking commitments for Missouri were met by stocking 12-14 inch muskie fingerlings at a rate of 1 fish/acre at Fellows Lake (820), Hazel Creek Lake (530) and Lake 35, Busch CA (62). Pomme de Terre Lake was stocked with 4635, 12-14 inch fingerlings (about 0.5 muskies/acre). Henry Sever Lake was designated as a surplus lake in 2012 and was stocked with 159 surplus muskie this year.

Show-Me-Newsletter is provided in the appendix.

### **Nebraska (K. Koupal) –**

Nebraska has limited use of esocids within our systems. We are managing to stock both muskie and northern pike in the requested systems at 2-3 year intervals. Space to culture esocids to a desirable size and the expense involved with raising them to this size are limiting factors for increased production and stocking. Many waters seem unable to successfully recruit these species. Thus, a statewide 40 inch minimum is in effect for muskie and many stocked waters have a 30" minimum on northern pike. Two main items are being investigated concerning esocids in Nebraska.

Northern pike production has hit a snag. There has been a decline in hatch percentage of broodstock spawned from our National Refuge lakes near Valentine Nebraska. Our hatchery staff has tried multiple combinations to try and isolate the specific problem and this past year they used a new buffer solution technique (10.1 pH) that was suggested by Wisconsin. The new buffer produced mean eye up of 64.5 and 69.3% with various broodstock sources as compared to 49.1 and 36.8% eye up with the more traditional 9.3 pH regular buffer. Using a 0.6% saline

solution pre-mixed with regular buffer produced a mean eye up of 59.4%. Our staff plans to continue trying various combinations to produce more consistent and higher percent eye-up.

A northern pike tagging project was started at Lake Wanahoo in March 2012 to determine angler exploitation by biologist Jordan Katt (questions can be referred to him). Lake Wanahoo recently opened to the public, but the dam has been holding water since 2010. Before the project began, there were no length limit regulations on northern pike in the reservoir. Northern pike were captured with trap nets and electrofishing. Electrofishing proved to be ineffective and was only used two days. A total of 718 northern pike were floy tagged over 7 days during the spawning run. The population estimate was 2,109 pike in the reservoir (3/acre). Following the end of tagging, an emergency catch-and-release regulation was put on the reservoir for northern pike. This complicated the study somewhat since it was designed to measure angler exploitation which is now illegal. Pending approval by the board of commissioners, a 30" minimum size limit on the northern pike will begin January 1, 2013. The University of Nebraska-Lincoln Coop Unit is conducting a creel survey on the reservoir and will continue through 2013. Tag returns have been minimal in 2012, most likely due to the catch-and-release regulation and the creel clerks asking for any tag numbers from anglers. When some harvest becomes legal, creel clerks will no longer be asking for tag numbers, and will record any tag numbers they see from harvested fish.

**Ohio** (C. Wagner) –

Next fall the Ohio Division of Wildlife is kicking off a tagging study slated to be 10-yr in duration examining, first and foremost, escapement out of reservoirs in relation to fish size, dam/flow operation, season, etc... and secondarily looking at angler harvest, catch recycling, in-system mortality, etc...all fish will have a t-bar style tag and some fish will have PIT tags implanted for automatic tailwater antenna stations capturing the escapement event. Further, certain club/anglers will be outfitted with PIT tag readers to add to sample size in-reservoir. We did some tagging trials this fall in the hatchery (minnow finished fingerlings) exploring PIT tag body location and retention of both PIT tags and t-bar tags. No surprise, things like fish size (bigger is better), depth of sedation, water temperature and handling all influenced survival (compared with controls) and multiple acceptable PIT tag body locations were confirmed. Double tagging (PIT tag and t-bar external) takes a fair amount of time and we'll have our work cut out for us doing some 6,000 fingerlings next fall.

In the near future (before next spring's fishing heats up) our Muskie Angler Log (MAL) <http://www.ohiodnr.com/muskielog/welcome.aspx> will be getting a facelift in terms of both functionality and looks. Stay tuned and check it out.

**Ontario** (Seeking new representative) – No report provided.

**Washington** (B. Bolding) – No State report provided.

**Wisconsin** (J. Weeks) –

Muskellunge Team Meeting Notes

Kemp NR Station, Lake Tomahawk

Wednesday, September 5, 2012

1. Attendance – Mike Donofrio (EAD), Steve Gilbert (NAD), Dan Isermann (UWSP), Martin Jennings (SS), John Aschenbrenner (WCC), Mark Luehring (GLIFWC), Dennis Scholl (NAD), Jonathan Pyatskowitz (NAD), Tim Simonson (CO), Scot Stewart (SAD), Bruce Underwood (CO), Justin Van De Hey (UWSP), Jordan Weeks (WAD), Doug Welch (SAD), Aaron Cole\* (NAD), Greg Matzke\* (NAD), Mike Vogelsang (NAD), Dean Bortz. \*=New member.
2. Reviewed Charge - <http://dnr.wi.gov/fish/musky/muskymanteam.html>
3. Musky Research Update – Martin Jennings provided an update on activities related to muskellunge research out of his office, including age and growth studies (including Spider Lake, Sawyer County), PIT tag retention, support of our broodstock management program, spawning/capture site fidelity and movements and implications for population estimation and brood stock capture, volunteer PIT tag recovery program, and cisco monitoring program. Contact Martin for additional information.
4. Regulations – We reviewed the 2012 Conservation Congress Advisory Questions related to muskellunge management. First, the proposal to increase the minimum length limit from 28” to 40” on Spider Lake, Sawyer County (2,003 Yes – 381 No – originated as a resolution in 2011) is currently under review by the local fisheries biologist and they plan to assemble all the available data, including a survey planned for spring 2013 before acting on this proposal. We will have a chance to review this if a rule change proposal is developed. We also review 2 Congress advisory questions related to motor trolling: The first, essentially to allow trolling with live bait using an electric motor, “while position fishing” (2,161 Yes -1,236 No – originated as a resolution in 2011) was rejected in deference to the following proposal, which was to specifically allow motor trolling statewide (1,928 Yes - 1,576 No; see Appendix). This proposal was supported by the Musky Team. After considerable discussion regarding whether to propose 3-lines or 1-line, the consensus was to propose 3-lines statewide, and consider the statewide vote in applying the regulations uniformly across the state.

We continue to recommend that this proposal be presented as a rule change by the department at the 2013 Spring Hearings. The format of the question should be similar to the one presented by the Conservation Congress Warm Water Study Committee. In terms of citizen resolutions from the 2012 spring hearings, we supported the concept of increasing the musky size limit on Petenwell and Castle Rock from 45" to 50" because it fits within the framework we have established. Eventually, we would prefer to see the 45" waters changed to either 40" or 50". We also discussed whether the entire Wisconsin River system (at least from the dam at Lake Du Bay downstream) should be consistent. We will discuss this further if the local biologist submits a rule-change proposal for the next cycle. We are still on track to pursue the 54" minimum length limit on Green Bay/Lake Michigan for the 2013 hearings.

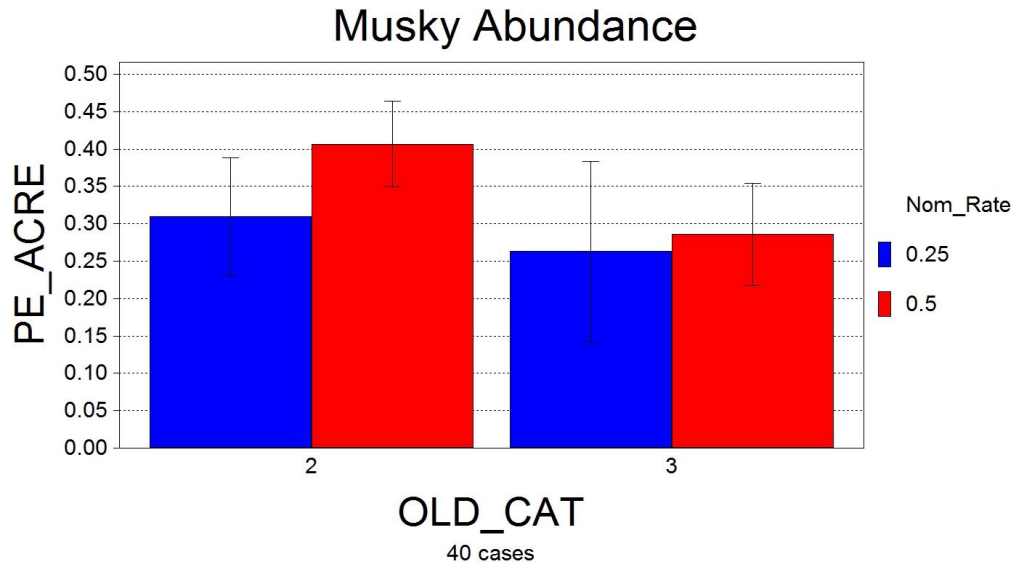
5. Propagation/Stocking – We reviewed the updated “cost to creel” estimates for large fingerling muskellunge. The revised method took several stocked waters with completed creel surveys, computed annual average ongoing costs to maintain the populations with stocking, and used creel surveys to estimate a “snapshot” of average annual catch and harvest. The propagation program is still working on developing the final cost estimates, so, while the method and catch/harvest data are completed, the final cost-to-creel estimate is not available. We also discussed current issues related to musky propagation, specifically related to the increasing forage costs/quality, and the implications for management. While we considered the option of stocking small fingerlings, including the development of hypotheses, for evaluation of this technique. However, Bruce felt that these would most likely be raised on dry forage. We felt that the larger issue of the use of dry, pelleted forage for production fish needs to be addressed before we can begin to tackle the development of guidance for small fingerling stocking. We realize that cuts need to be made in the musky propagation program. The team did not feel comfortable with maintaining the same levels of production with a potentially lower quality product. Therefore, the Musky Team recommends that, until a thorough evaluation can be conducted of the long-term, in-lake survival of fish raised on dry, pelleted forage, that no such fish be used to fulfill regular production quotas. Rather, the musky team recommends that the total number of fish raised be reduced while maintaining the current live-forage rearing practices, in order to meet budget constraints. We will work with the biologists and work units to accomplish the anticipated reductions.
6. Aspects of the muskellunge brood stock management were discussed. Bruce Underwood provided a report on 2012 field spawning operations and current production levels. This past spring, GTH collected 1.2 million musky eggs (24

quarts) from Lost Land/Teal Lakes. A total of 66 fish were spawned (27 females and 39 males) in 17- 1:1 pairings, 6- 1:2 pairings, and 4- 1:3 pairings. Of the 66 individuals spawned, 14 (21%) were tagged previously. Currently, GTH is on course to fill all 2012 musky quotas. However, because spring came 3 weeks earlier than normal, a 2-week delay in harvest was experienced due to a virus, and there are as many as 50% more large walleyes in our ponds than ever before, our total forage bill for the year is around \$180,000 – almost \$50,000 more than last year (which, up until this year, was the highest amount ever). Without a budget supplement, the facility will not be able to start the muskies it needs next spring to meet 2013's quotas. Despite the virus, Sue Marcquenski has stated that the muskies we have this year are some of the healthiest, most robust muskies she has ever seen. GTH's 2013 quotas show that nearly 10,000 muskies need to either be fin-clipped or PIT tagged, which means 3 ponds will need to be held well into September of 2013, in order for the water temperatures to cool sufficiently to allow this to be done, which means higher feeding costs. AOH collected 15+ quarts from Pelican Lake, Oneida County, March 20-April 16. A total of 32 fish were spawned with 10 pairings (5 – 3:1, 2 - 2:1, and 3 – 1:1). A total of 67 muskies were handled but not all were in spawning condition.

7. Justin Van De Hey provided an update of the ongoing evaluation of our brood stock management plan. UWSP has a graduate student (Zeb Woyak) working on a genetic-based evaluation of brood stock goals. He will be able to provide us with a detailed updated next summer, once he has gotten into his program of study. We discussed the continued practice of PIT tagging adults and stocked fingerlings in brood lakes. We concluded that we should continue to PIT tag all spawned adults, in order to determine repeated use of adults in brood lakes (which could potentially affect calculations of effective population size), and we also concluded that we should attempt to PIT tag all fingerlings stocked back into brood stock lakes. It is important to determine the relative contribution of natural versus stocked fish, especially in our brood lakes. Due to the expense, we will need to write a project for funding in the next biennium (or seek external funding).
8. We discussed the ongoing Stocking Evaluation, including what we know right now, and what we need to accomplish in 2013-14. We reviewed all the existing data for stocked lakes from the last 10+ years. There are several patterns that will guide us in revising our stocking guidance over the next several months. First, we looked at abundance of muskies in category 2 and 3 lakes, stocked with large fingerlings at different rates (0.25/acre/year versus 0.5/acre/year). Generally, category 2 waters tended to have higher densities (presumably due to the joint

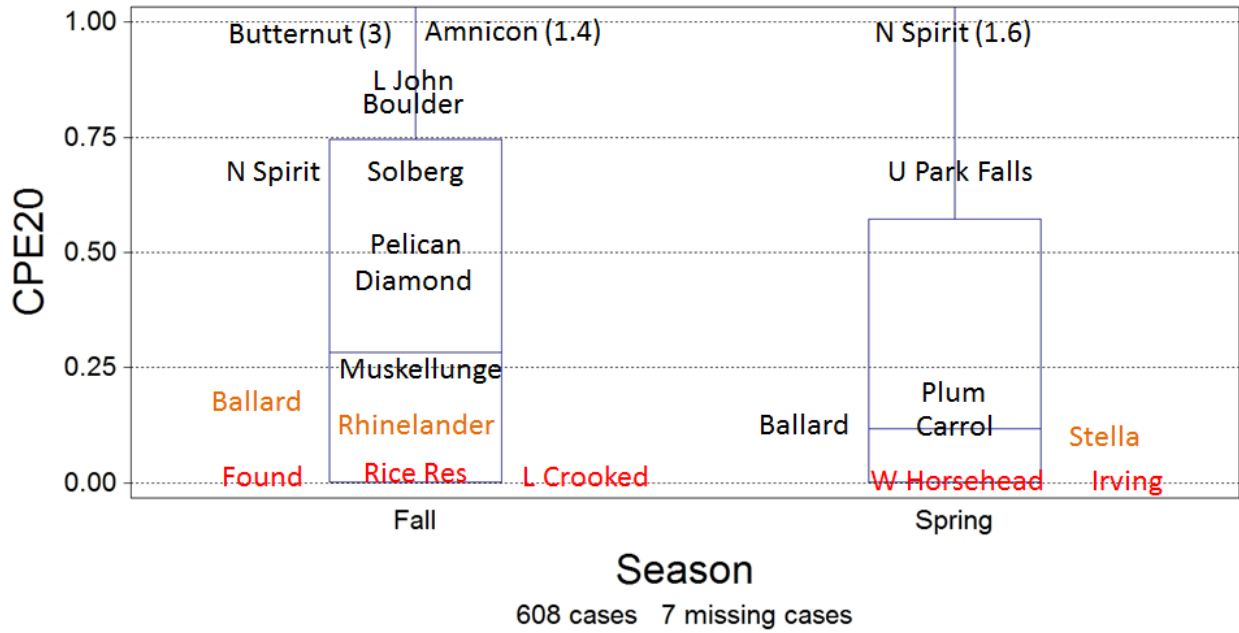


contribution of natural and stocked fish). Also, the two stocking rates did not seem to strongly influence adult density in stocked (category 3) waters (see figure, below). A stocking rate of 0.25 fingerlings/acre/year typically results in acceptable adult densities in both types of musky waters. For waters where the goal may be a somewhat lower adult density, a lower stocking rate is recommended (e.g., A1 “trophy” waters). We will finalize these recommendations at our winter 2013 meeting.

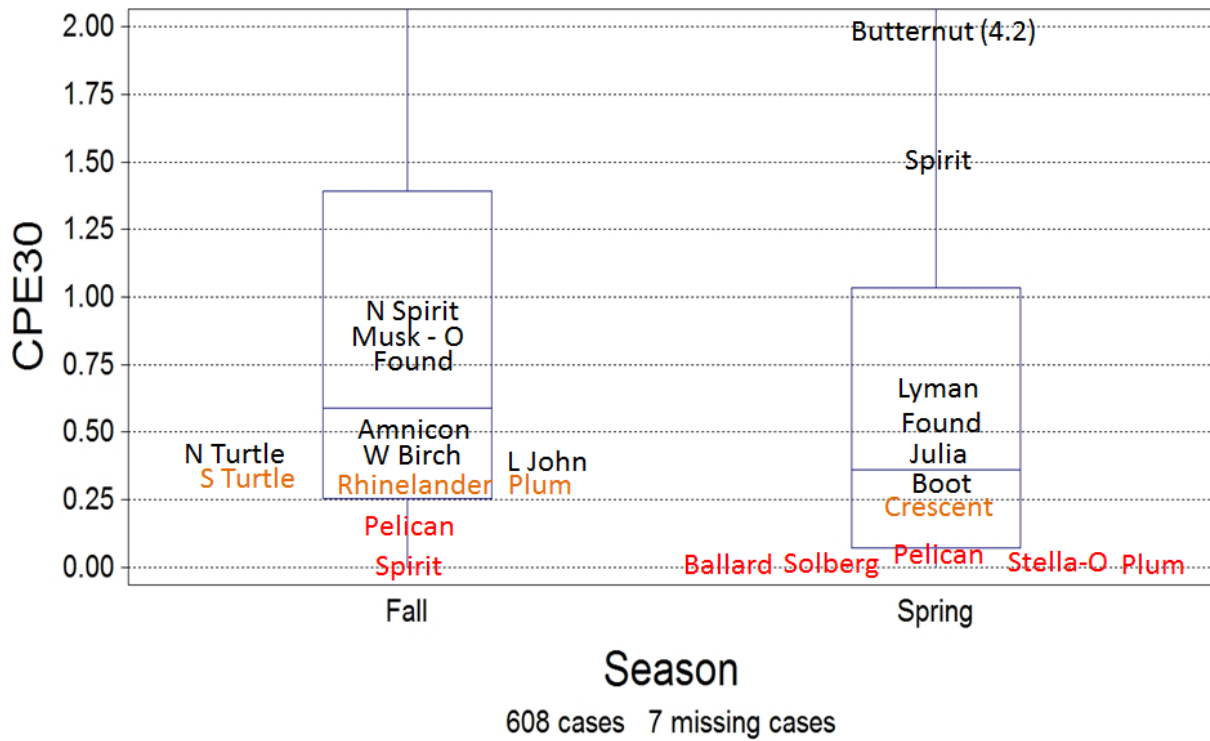


We also looked at the randomly selected category 2 waters where stocking was terminated. Most have some information available, although very few have current population estimates (Trout, Plum, Crescent, N&S Turtle). We discussed other types of data that could be used to complete the evaluation. We have quite a bit of electrofishing data from these waters showing the catch of juvenile muskies. Is this sufficient to wrap up this project, or do we need population estimates? Given the status of Tier II funding, it is unlikely that we will have many more opportunities to conduct PEs on these lakes.

## Juvenile Musky EL CPE NOR 2000-12



## Juvenile Musky EL CPE NOR 2000-12



- GL Spotted Musky – Mike Donofrio provided as update on development of our inland brood stock lakes. We anticipate again obtaining spotted muskellunge fingerlings spotted from the Michigan DNR this fall. We expect to obtain 3,000

fingerlings from 20 females. These fish were spawned from Lake St. Clair this past spring. The fish will be transported by us to the Wild Rose hatchery, where they plan to hold them overwinter for eventual stocking into the brood lakes in spring. Last year, catastrophic losses occurred at the hatchery and no fish were stocked.

10. We discussed standard sampling and assessment protocol for muskellunge fisheries. Based on the work of Martin Jennings, as well as the experience of our biologists, we recommend that, when conducting musky population estimates as part of a more comprehensive survey, that the marking be conducted in the year prior to the “comp survey” and the recapture period be included as part of the “comp survey”. It is important to include a variety of sampling gears and periods to complete the recapture, and to put in as much effort as possible to increase the number of recaptured fish (which improves the estimate). Also, the marking period will provide a good indicator of whether the population is large enough to even complete an estimate of abundance. For example, if very fish are marked, it may not be cost effective to conduct the recapture. It is also very important to move the nets often during both the marking and recapture periods, given the high degree of site-fidelity that has been seen for muskellunge, included both targeted (based on past surveys and likely habitat) as well as random net locations. The protocol and handbook will be revised to reflect these recommendations. Also, we discussed and finalized standard criteria for assessment of trophy (Class A1) waters. These are expectations for our designated trophy waters, based on the normal ranges of data and best professional judgment. Lakes or rivers meeting these criteria (or with the potential to meet these criteria) should be designated trophy waters. Designated trophy waters not meeting these criteria should be evaluated for further management action(s).

Metric	Value
PSD42 (%)	$\geq 17$
PSD38 (%)	$\geq 30$
PE (number/acre)	$\leq 0.3$
CPE (Number/net-night)	$< 0.5$
Length <sub>infinity</sub> (inches)	$\geq 48$
Omega (inches/year)	8
Lake Size guideline (acres)	$\geq 1,000$

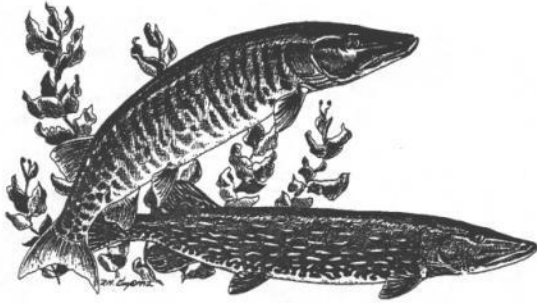
We also discussed assessment criteria for determination of self-sustained waters. Below is a draft list of criteria for further discussion. There was a suggestion to add a PSD metric for the size-structure criteria. Simonson will evaluate this and provide the information for further input and a final recommendation.

Metric	Value	Normal range
Fall CPE $\leq$ 20" (number/mile)	$\geq$ 0.24/mile	0.0 – 0.53
Fall CPE < 30" (number/mile)	$\geq$ 0.67/mile	0.26 - 1.38
Spring CPE $\leq$ 20" (number/mile)	$\geq$ 0.13/mile	0.0 - 0.69
Spring CPE < 30" (number/mile)	$\geq$ 0.37/mile	0.00 - 1.65
Size-structure	"several sizes/ages"	- -
Adult PE (number/acre)	$\geq$ 0.14/acre	0.14-0.52

11. FYI - Musky symposium, Twin Cities, Spring 2016 – Muskies Inc.
12. Winter Meeting – May want to consider meeting at the fisheries statewide. If we do end up having a Statewide, it will be in February.

*These minutes are respectfully submitted by J. Meerbeek*

# **Appendix**



## **Esocid Technical Committee**

North Central Division  
American Fisheries Society

Chair – Jonathan Meerbeek (Iowa DNR: [jonathan.meerbeek@dnr.iowa.gov](mailto:jonathan.meerbeek@dnr.iowa.gov))

Immediate Past Chair – Jonathan Meerbeek (Iowa DNR: [jonathan.meerbeek@dnr.iowa.gov](mailto:jonathan.meerbeek@dnr.iowa.gov))

Chair-elect – Dave Woods (MDC; [Dave.Woods@mdc.mo.gov](mailto:Dave.Woods@mdc.mo.gov))

### **Annual Report to the North Central Division, American Fisheries Society**

#### ***Goal 1: Global Fisheries Leadership***

AFS will be a global leader providing information and technical resources for the sustainability and conservation of fisheries resources.

#### **Strategies**

1. The Esocid Technical Committee (ETC) holds two business meetings every year to discuss committee business, ideas, goals, and future plans of the committee. State and Provincial reports are presented at each meeting to allow for extensive exchange of information and activities among esocid biologists throughout the North Central Division. For the past 4 years we have been conducting joint summer meetings with the Centrarchid and Walleye Technical committees to improve attendance and increase information exchange. This year's summer meeting was held 24-28 July at Hayward, Wisconsin. The meeting featured 8 technical presentations and ensuing discussions covering recruitment, growth, population dynamics, fish movements and behavior, and harvest and management issues. The

second business meeting is held during the Midwest Fish and Wildlife Conference in December.

2. The ETC recently republished soft-bound copies of the 2006 International Pike Symposium in an effort to broaden distribution of this valuable work. We are currently selling them to fisheries scientists and anglers who are interested in pike biology.

### ***Goal 2: Education/Continuing Education***

AFS will facilitate life-long learning through world-class educational resources at all academic levels and provide training for practicing professionals in all branches of fisheries and aquatic sciences.

#### **Strategies**

1. ETC meetings provide a forum for students to present their work, get valuable feedback, and develop professional networks.
2. The ETC has a website of contact information for individuals interested in esocids. The website retains updates of division-wide projects and reports such as *A Synopsis of Angling Regulations for Esocids in North America* and *The Introductory, Maintenance, and Restoration Stocking of Esocids*.
3. The ETC has offered educational opportunities at various summer sessions. A continuing education workshop *R Introduction Using Basic Fisheries Methods* (facilitated by Dr. Derek Ogle) was held as a prelude to the summer 2012 meeting.

### ***Goal 3: Value of Membership***

AFS will serve its members and fisheries, aquaculture, and aquatic science constituencies to fulfill the mission of the Society.

#### **Strategies**

1. Summer and winter meetings instigate valuable discussions following reports of current esocid research and management activities from each state and province. The meetings also provide a foundation for inter-agency projects such as the reports listed above.
2. Focal topics for future meetings are determined by ETC members. Potential topics for 2013 include GIS, sampling and evaluating recruitment, new tagging methodologies, angler retention and human dimensions, quantitative techniques, and long-term databases and trend analyses. For 2013, we will again coordinate our summer meeting with the WTC and CTC to extend our interactions with those groups.



## Proposal for 2013 Summer Joint Centrarchid, Esocid, and Walleye Technical Meeting

Dates: July 23, 24, 25

Location: Wausau, Wisconsin

Conference Facility and Lodging: Stoney Creek Inn (See attached Draft Contract)

### Monday 22

Possible class sponsored by Wisconsin Chapter AFS

Class suggestions: Fish Id, Using Excel 2010 for fisheries work.....

### Tuesday 23

Second day of class if needed

Float trip down Wisconsin river (if there is interest)

Social: Stoney Creek featuring local micro brews

### Wednesday 24

Discussions and Talks (Stoney Creek Inn)

Dinner: Cookout at Rib Mountain State Park

Social: The Bar Sports Bar (walking Distance from Stoney Creek Inn)

Entertainment: World Famous Name That Roadkill Game (prizes for all who play)

### Thursday 25

Wrap up and business meetings

### Local Contact

Steve Gilbert

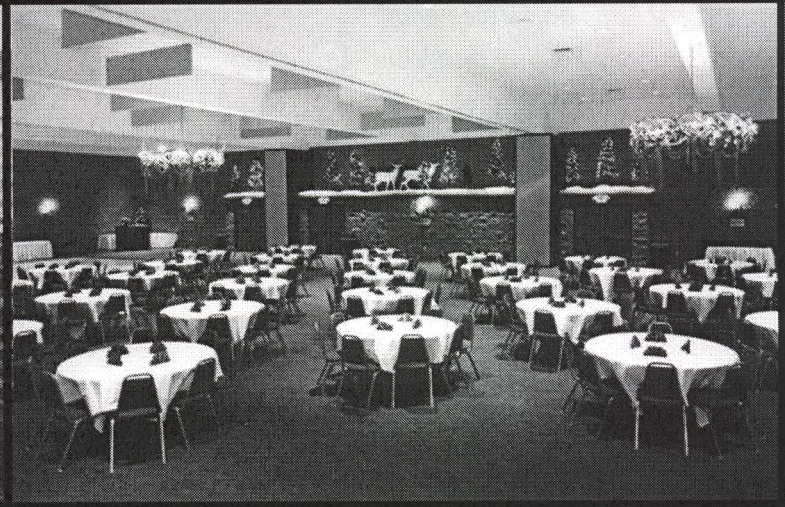
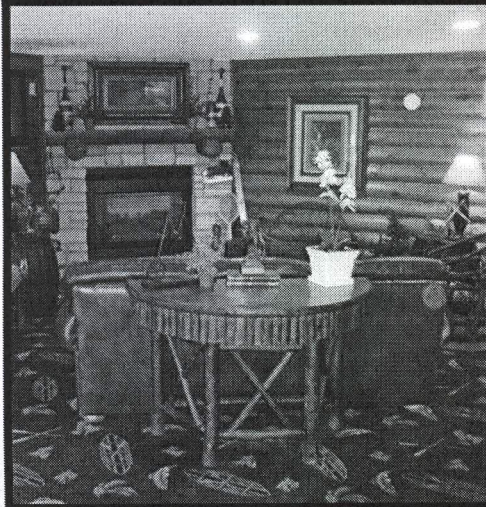
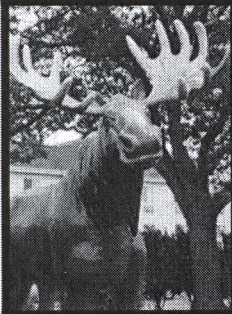
Wisconsin DNR

715-356-5211 Ext 229

[stephen.gilbert@wisconsin.gov](mailto:stephen.gilbert@wisconsin.gov)



Welcomes You!





## Proposal

August 30, 2012

**NAME OF EVENT:** Walleye Technical Committee of Northcentral Division of the American Fishery Society

**ARRIVAL DATE:** July 23 – 25, 2013

**CONTACT:** STEVE GILBERT

**TELEPHONE:** 715.701.0214

**EMAIL:** cpsupnorth@frontier.com

Come "Experience the Great Outdoors...Indoors" at our unique, custom-designed lodge hotel. The Stoney Creek Inn of Wausau is a beautiful 107 room property that provides all of our guests with an atmosphere that is warm and cozy, a touch of "at home" comfort, and the fun of toe tappin' music. Attached to the Stoney Creek Inn is the Northwoods Conference Center where our experienced staff provides outstanding service for meetings and banquets both large and small.

### Hotel Amenities include:

- Complimentary Hot Breakfast
- Fresh Coffee Around the Clock
- Free Wireless and Hard Wired Internet Access
- In room Coffee Makers, Iron/Ironing Boards, Hair Dryers, LCD TVs in every guest room
- Exercise Room
- "Wilderness Park" Pool Area with heated Indoor Pool, Whirlpool, Dry Sauna, Fireplace, Television and Outdoor Patio
- Video Game Room
- Free Local Calls and Voice Mail
- Guest Laundry Facility and Valet Service
- Cubby Hole Lounge
- Northwoods Traveler Frequent Stay Program
- Unique Northwoods Gift Shop
- Complimentary Airport Shuttle Service (based on availability)
- Guest Computer Station
- Fax and Copy Service Available

### Conference/Banquet Amenities include:

- Over 10,000 sq. feet of multi-use conference space
- Onsite event coordinator

Stoney Creek Inn and Northwoods Conference Center  
1100 Imperial Avenue  
Rothschild, WI 54474  
(715) 355-6858 • 1-800-659-2220  
[www.stoneycreekinn.com](http://www.stoneycreekinn.com)

- Free Wireless and Hard Wired Internet Access
- Audio Visual Equipment
- Choice of several approved caterers
- Themed breaks
- Spacious parking area with complimentary parking
- Fax and Copy Service Available
- Complimentary Airport Shuttle Service (based on availability)

**Walleye Technical Committee Northcentral Division of the American Fishery Society**

**Guest Room Block and Rates**

Date	Number of Rooms	Room Rate
July 23, 2013	Salon	\$100.00
July 24, 2013	Salon	\$100.00
July 25, 2013	Salon, Timberland and Pines Room	\$200.00

\*should your group produce 30 or more total sleeping room nights during your event, the meeting room space detailed above will be offered complimentary all three days.

\*I have tentatively held one of our salons for your general session meeting space. Due to the size of your group, I recommend you set classroom in the front of the Salon and then rounds in the back. 6 foot tables would be set in the middle of the room for beverages, snacks and a buffet style meal, should you chose that option. On the night of your potential evening dinner, the room would be flipped after your day session to all rounds.

\*On the third day of your meeting I have included a general session room, along with two smaller break out spaces. Would you be ok with using the general session room as one of the 3 break out sessions? If you are entirely opposed to that idea, I would be willing to discuss extending a third small break out space to you.

**Sleeping Room Rate:** \$70.00 for a Standard Double or Standard King Room (5 complimentary theme suite upgrades)

- Check in begins at 3pm and check out is at 11am.
- Room blocks will be held until 30 days prior to arrival date.

Steve,

I really appreciate the opportunity to submit bids for your 2013 group meetings. I would love to be your host hotel in February and July in addition to the group that has already signed an agreement for their October meeting. I have detailed pricing above, please let me know if you have any questions on anything. I sent the state rated catering menus with my last proposal. Let me know if you need it again and I will send it on over.

Thanks again, please know we truly appreciate the business,

Sincerely,

*April Myers*

April Myers / Sales Manager  
 Stoney Creek Inn and Northwoods Conference Center  
 Direct phone: (715)241-5012 Email: april.myers@staysci.com

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# Stocking Northern Pike in South Dakota Urban Fisheries

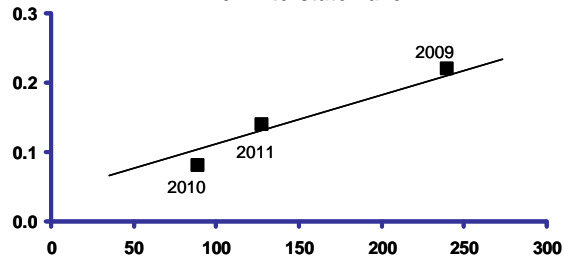
by Dave Lucchesi

Adult northern pike are stocked into kids fishing ponds and small urban lakes across eastern South Dakota each year. They are aggressive, easy to catch and generate excitement with anglers using these fisheries.

A 3-year creel survey (April 2009-March 2012) on five small lakes in and near Brookings, South Dakota demonstrated the value of stocking adult northern pike into urban waters. South Dakota Game, Fish and Parks traditionally makes annual early-spring pike stockings into two of these waters at densities that vary from 6 to 55 fish/ha depending on the availability of fish.

Survey results found a positive relationship between summer pike rates and the number of pike stocked into 11.8 ha Interstate Lake 1). Pike catch rate also had a positive influence on fishing pressure (Fig 2). Anglers harvested and 36% of the stocked pike in 2010 and 2011, respectively, but only 9% in 2009.

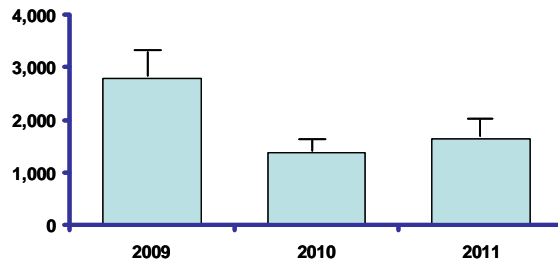
**Fig 1. Number of Pike Stocked vs. Catch Rate (fish/h) on Interstate Lake**



catch  
(Fig  
80%  
2009  
in

A clear relationship between stocking density, summer catch and fishing pressure was not evident on 4.5 ha Gustafson's Lake. However, fishing pressure jumped in March 2012 immediately after a high density stocking of 55 pike/ha.

**Fig 2. Summer fishing pressure (h) on Interstate Lake**



rate

More anglers targeted pike on the Brookings lakes than any species other than rainbow trout. In addition, northern pike stockings generated more angler use and higher catch rates than adult white bass stockings. These findings suggest that northern pike are an excellent option for stocking urban waters.



# Show-Me Muskie Project

## 2012 Newsletter

-Craig Fuller, Muskellunge Program Coordinator

### Spring 2012 Sampling Results

Although efforts were made to conduct standardized fyke net surveys this spring at Pomme de Terre Lake, Hazel Creek Lake, Fellows Lake, and Busch CA Lake 35; unusual early warm-up and warm water temperatures makes this year's data difficult to compare to long-term trends.

**Pomme de Terre Lake** – With surface water hitting 70°F by the first day of April (nearly 20 degrees warmer than optimal sampling conditions) and the appearance that most muskie had already moved off the banks out to deeper water, sampling effort was cut short after running fyke nets for only two days. A total of 23 muskie were captured in 20 net-days, resulting in a catch rate of 1.2 fish per net-day. Of the muskie captured, 37% were 36 inches or longer and 5% were 40 inches or longer.

**Hazel Creek Lake** – A total of 37 muskie were captured in 10 net-days, resulting in a catch rate of 3.7 fish per net-day. Of the muskie captured, 11% were 36 inches or longer and 5% were 40 inches or longer.

**Fellows Lake** – A total of 94 muskie were captured in 24 net-days, resulting in a catch rate of 3.9 fish per net-day. This is the highest catch rate reported since sampling efforts began in 1999. Of the muskie captured 26% were 36 inches or longer and 9% were 40 inches or longer. Muskies captured ranged in length from 23.3 – 45.6 inches; weights ranged from 3.3 – 24.5 pounds.

**Busch CA Lake 35** – A total of 13 muskie were captured in 20 net-days, resulting in a catch rate of 0.7 fish per net-day. Though the muskie appeared to be in good condition, none larger than 36 inches were captured. Muskie captured in the sample ranged in length from 29.0 – 35.5 inches.

### Change in Status for Henry Sever Lake

Henry Sever Lake was removed from the muskie program in 2010 due to a perceived lack of angler use. For example: Show-Me Muskie Project results indicated that only one angler provided information about fishing at Henry Sever Lake from 2005 to 2008; additionally, the conservation agent and local MDC staff had not observed anyone fishing for muskie in three years (2007 – 2009). Since that time, a number of muskie anglers expressed their concerns and indicated that there is likely more muskie fishing interest at Henry Sever Lake than was realized. Furthermore, the 2010 Show-Me Muskie Project results revealed a total 29 fishing trips were made to the lake, four more than the total 25 trips that were reported from the previous ten year period (2000 – 2009).

Therefore, Henry Sever Lake has been reinstated in the muskie program and is designated as a surplus stocking location. What this means is that once stocking commitments have been filled for the other four lakes in the muskie program (Pomme de Terre Lake, Fellows Lake, Hazel Creek Lake and Lake 35 on the Busch Conservation Area), any muskie fingerlings left over (surplus), will be stocked at Henry Sever Lake (up to a maximum of 158 muskie annually).

## News from Last Valley Hatchery

A special THANK YOU goes out to both the Hugh C. Becker Committee of the Twin Cities Chapter of Muskies, Inc. and the Pomme de Terre Chapter of Muskies, Inc. for their generous donation to purchase predator control netting which cover the muskie rearing ponds. Without this netting it would not be possible to produce the quality and numbers of muskie for stocking in Missouri waters; the herons would do serious damage. Hatchery Manager, Randy Terrell reports that 6,600 muskie fingerlings were received from Spirit Lake Fish Hatchery, in Iowa on June 28<sup>th</sup>. The four inch long muskie were placed in rearing ponds and started feeding on fathead minnows immediately. Since then the young muskie have been eating their way through nearly 7,000 pounds of minnows and are measuring in at 11 inches long. It looks like a healthy group of 12+ inch muskie should be ready to be stocked in October.

### Show-Me Muskie Project Summary

First, I want to thank all of you that submitted "Daily Trip Record" forms. Remember, the more information we get from anglers the better the estimate is of how the fisheries are performing. This adds to information used to guide management decisions that will make muskie fishing in Missouri the best it can be. We had 49 anglers submit information for 2011. Collectively, they made 417 trips and fished a total of 2,387 hours on five lakes. There were 358 muskie encounters (6.7 hrs/encounter) and 179 caught (13.3 hrs/catch); of which 75 were 36 inches or longer (31.8 hrs/catch >36"), within the goal identified in the current muskie plan of 20 to 40 hours. The following are individual lake results:

**Pomme de Terre Lake** – A total of 201 trips were made by 17 anglers fishing a total of 1,139 hours. There were 159 muskie encounters (7.2 hrs/encounter) and 68 caught (16.7 hrs/catch); of which 24 were 36 inches or longer (47.4 hrs/catch >36").

**Hazel Creek Lake** – A total of 48 trips were made by 10 anglers fishing a total of 291 hours. There were 43 muskie encounters (6.8 hrs/encounter) and 25 caught (11.6 hrs/catch); of which 3 were 36 inches or longer (97.0 hrs/catch >36").

**Fellows Lake** – A total of 103 trips were made by 8 anglers fishing a total of 533 hours. There were 119 muskie encounters (4.5 hrs/encounter) and 59 caught (9.0

hrs/catch); of which 35 were 36 inches or longer (15.3 hrs/catch >36").

**Lake 35, Busch CA** – A total of 2 trips were made by 1 angler fishing a total of 15.0 hours. There was only 1 muskie encounter (15.0 hrs/encounter) and 1 muskie was caught (15.0 hrs/catch). No muskie 36 inches or longer were caught.

**Henry Sever Lake** – A total of 63 trips were made by 13 anglers fishing a total of 409 hours. There were 36 muskie encounters (11.3 hrs/encounter) and 26 caught (15.7 hrs/catch); of which 13 were 36 inches or longer (25.5 hrs/catch >36").

Again, thanks for submitting your "Daily Trip Record" forms. You will notice that with this newsletter, I have provided a self addressed stamped envelope and blank forms for you to submit your 2012 muskie fishing activities. If you prefer, you can fill out an electronic version of the form. Go to:

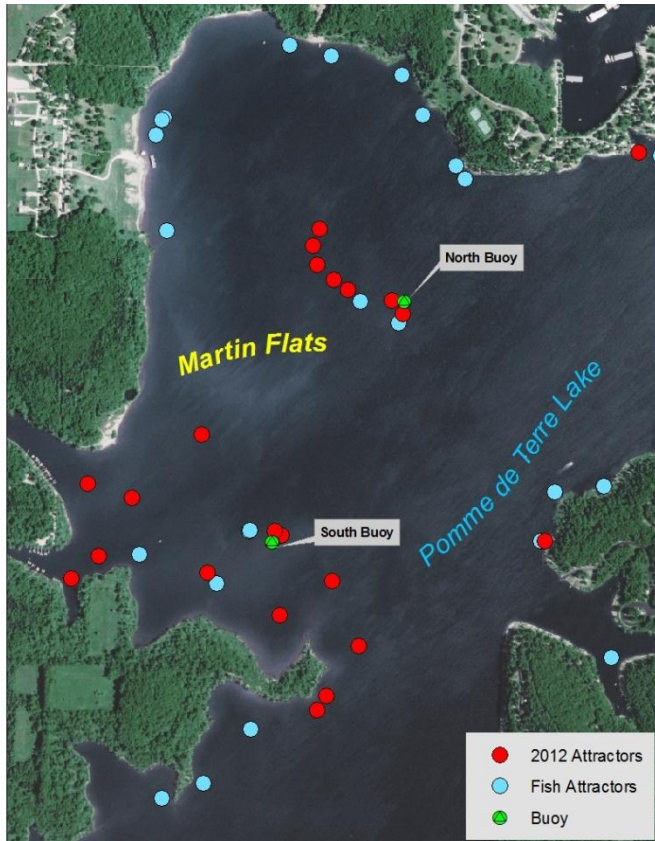
[http://mdc.mo.gov/sites/default/files/resources/2010/05/muskiedailytripform\\_2011.pdf](http://mdc.mo.gov/sites/default/files/resources/2010/05/muskiedailytripform_2011.pdf) You can save a copy of this ".pdf" file and fill in the blanks. Then, send me an e-mail ([craig.fuller@mdc.mo.gov](mailto:craig.fuller@mdc.mo.gov)) with the file attached. Participants that I already have e-mail addresses for are also receiving electronic versions of this newsletter and "Daily Trip Record" forms. Remember, if you're fishing with a partner, record your data individually and not as a party of anglers. Also, it is important to report information even when you don't catch anything. Please submit your 2012 daily trip record forms to me by February 1, 2013.

### 2011 Stocking Summary

In October 2011, the following four lakes received their full stocking commitments. As outlined in Missouri's Muskie Management Plan, stocking numbers are based on the size of the lake. Lakes less than 1,000 acres are stocked at a rate of one muskie (12 – 14 inches) per acre: Fellows Lake (820 acres), Hazel Creek Lake (530 acres) and Lake 35, Busch CA (62 acres). Lakes greater than 1,000 acres are stocked at a rate of one half muskie (12 – 14 inches) per acre: Pomme de Terre Lake (7,820 acres). Now that Henry Sever Lake (158 acres) is designated as a surplus stocking location, Henry Sever Lake will receive surplus (up to a maximum of 158) muskie fingerlings once stocking commitments have been filled at the other four lakes.

## Habitat Improvement Projects

**Pomme de Terre Lake** – Chances are, if you fish for muskie on Pomme, you are familiar with “Martin Flats”. Over the past couple of years many anglers have commented that it has been a long time since any brush piles have been placed in Martin Flats. Last winter we placed 21 cedar tree brush piles throughout the area.

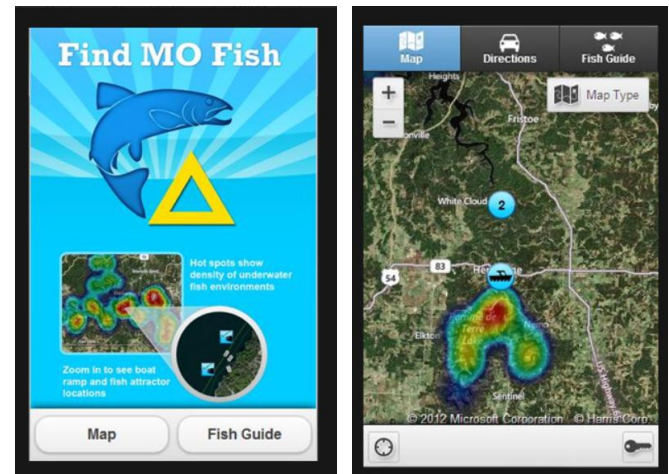


All fish attractors for Pomme de Terre Lake and Fellows Lake can be found using the interactive fish attractor map on-line (GPS coordinates are also available) at:

<http://newmdcgis.mdc.mo.gov/statewidefishattractorsver2/basicviewer%202/index.html>

Also, anglers can now get high-tech help locating fishing spots with the Missouri Department of Conservation’s (MDC) *Find MO Fish* mobile application for smart phones, tablets and other mobile communication devices. Using the *Find MO Fish* application, users can view location maps of Missouri’s major lakes, rivers and streams. The application also generates fast and accurate driving directions to numerous MDC boat ramps across the state. The application also allows users to find exact

locations of underwater fish structures and guide their boats to their favorite fish attractors.



*Find MO Fish* is available as a free download on the Google Play Store and Apple iStore. Multiple iOS and Android smartphones and tablets are supported by the application. Download the application for iOS devices at <http://tinyurl.com/brma6ef> or Android devices at <http://tinyurl.com/csxgglc>.

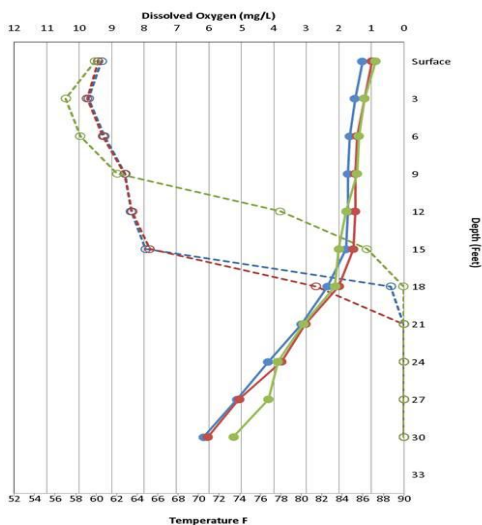
## A Closer Look at Limiting Factors to Managing Muskie in Missouri

Muskie are not native to Missouri. Being located at more southern latitudes than their native range, muskie in Missouri are subjected to regional environmental stressors. During summer, it is possible that combinations of thermal stratification and high water temperatures constrain or eliminate availability of quality muskie habitat. Previous studies have found that during the summer in lakes at southern latitudes, adult muskie typically seek water temperatures of about 78°F. Adult muskies prefer progressively lower water temperatures as their age and size increase. Thermal stratification occurs in Pomme de Terre Lake throughout the summer; a strong thermocline develops at approximately 12 – 15 feet by June. Water temperatures are at their highest levels during late-June and persist through mid-September, and dissolved oxygen is often insufficient at depths where temperatures are optimal or preferred by muskie. Since the muskie’s upper lethal limit is near 86°F, these conditions potentially create a thermally stressful environment for Pomme de Terre Lake muskie. This year, in an effort to collect information on regional environmental stressors that may play a role in limiting

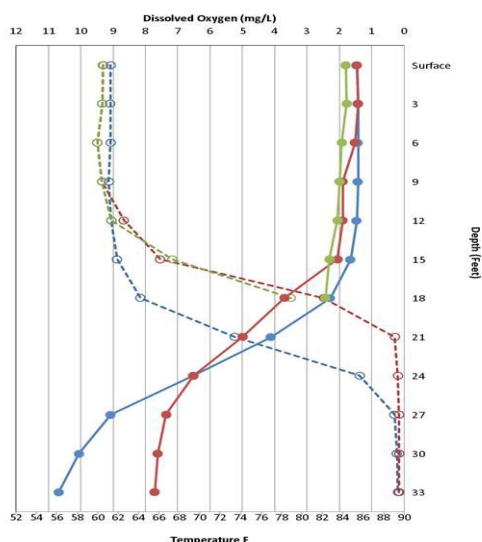


factors to muskie management potential in Missouri, we have collected oxygen and temperature data during June, July, August and September from all five lakes managed for muskie. Although data from each lake is slightly different, the concern is where oxygen levels are suitable to sustain life (>4 mg/L) the temperatures are warmer than optimal conditions and in some cases high enough to be stressful (> 80°F). As an example, the following graphs depict oxygen/temperature data collected in July:

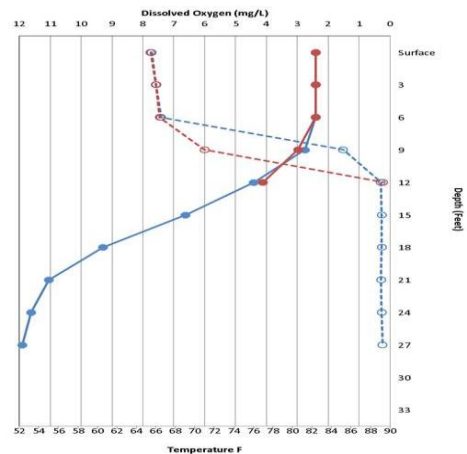
**Pomme de Terre Lake  
Oxygen/Temperature Profile (7/11/12)**



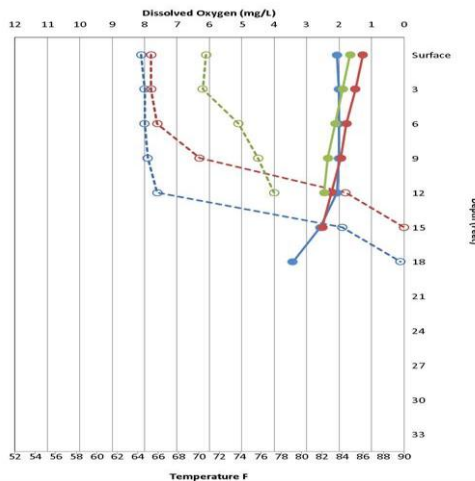
**Fellows Lake  
Oxygen/Temperature Profile (7/12/12)**



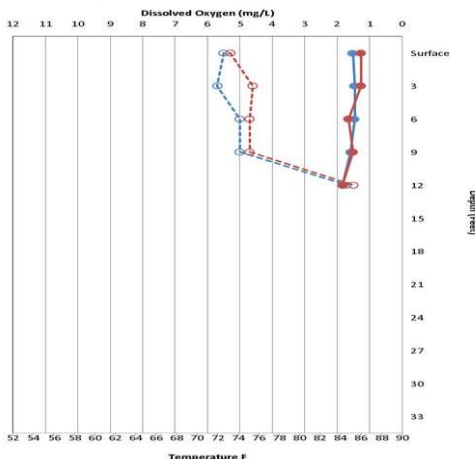
**Henry Sever Lake  
Oxygen/Temperature Profile (7/11/12)**



**Hazel Creek Lake  
Oxygen/Temperature Profile (7/12/12)**



**Busch Lake 35  
Oxygen/Temperature Profile (7/11/12)**



## Fellows Lake – Big Muskie

Many of you have probably heard about the big muskie being caught at Fellows Lake. On May 30, 2012, a muskie angler (and Show-Me Muskie Project participant) caught a 51 inch (35 lbs., 7oz.) muskie on Fellows Lake. The angler reportedly released the fish immediately after catching it. However, with water temperatures in the upper 70's, the fish was stressed from being caught. To no avail, the angler spent 4 hours trying to revive the fish, including pumping oxygenated water over the gills as a last resort, a testament to the angler's commitment to the fishery and to catch-and-release muskie angling given the possibility of a state record. The current Missouri state record muskie is 49.5 inches (41lbs., 2 oz.) caught from Lake of the Ozarks in 1981. Arrangements have been made with the taxidermist to obtain the cleithra (a bone behind the gill cavity) for the purpose of analysis to determine age and growth information.



## Muskie Catch and Release

Hooking and catching a muskie can be the thrill of a lifetime...



...but what do you do once you get this toothy giant to the boat? A large, fighting, toothy fish with a lure in its mouth can be difficult to release without harming the fish or yourself!

*Here are some tips for making a safe boat-side release*

**1.** Have a needle-nose pliers or similar tool to grab the lure with. Jaw spreaders and hook cutters can also be helpful.



**2.** The lure can be removed in the water while holding the fish in a net or by the base of the tail.

**3.** A muskie can be measured in the water with a floating ruler or in a measuring cradle.



**4.** Be careful not to touch the fish's gills. They are easily damaged.



**5.** Once your fish is free from the lure, it can be eased from the water for a quick photo. Be sure to keep the fish horizontal and carefully support its body.



**6.** When releasing your fish, hold it by the tail until it is capable of swimming away under its own power.

**Remember**, when water temperatures exceed 80°F muskie are living in a stressful environment. Even using the best catch-and-release practices, the stress of being caught can be fatal, particularly for larger fish. To avoid angling mortality, some anglers quit fishing for muskie once water temperatures exceed 80°F. I encourage others to take this conservative approach.

**Thank you** for participating in the Show-Me Muskie Project! I look forward to receiving your 2012 Daily Trip Record forms. I only have e-mail addresses for a few of you. So, please send me a quick e-mail with Show-Me Muskie in the subject line so I can add you to my e-mail list. My e-mail address is [craig.fuller@mdc.mo.gov](mailto:craig.fuller@mdc.mo.gov). Good luck and good fishing.

Your Muskellunge Program Coordinator - Craig Fuller

## XX. Allow Trolling Statewide

“Trolling” is trailing a lure or bait from a boat propelled by a means other than drifting or rowing. Trolling is generally prohibited, except where specifically authorized by rule. Trolling is currently allowed on all waters in **19 counties**; on one or more waters in **45 counties** (105 total waters); and on all **boundary waters** with **IA, MN** and **MI** (except in Vilas County boundary waters with MI). Trolling is also allowed for certain disabled anglers by special permit. “Position fishing” is fishing in a manner where the line extends vertically into the water while the boat is maneuvered by the use of a motor. This method is allowed on all water statewide. Also, under current rules, trailing a sucker or minnow behind a boat with the use of a motor while casting and retrieving another lure is not allowed on waters closed to trolling.

**Motor trolling on the inland waters of Wisconsin. Trolling is allowed on one or more waters in 64 counties (the number of waters open to trolling is shown; "A" means "All Waters").**



Motor trolling is already allowed on many Wisconsin waters, as well as in all the surrounding states and provinces, with no known adverse effects. Allowing trolling statewide would 1) simplify regulations by eliminating confusion about where trolling is or is not allowed (all the same fishing methods would be allowed on every water); 2) allow the trailing of suckers or minnows while casting with the use of a motor on all waters; 3) eliminate the need to define “position fishing”; and 4) eliminate the need for the department to issue disabled trolling permits.

**XX. Do you favor allowing trolling statewide (up to 3 hooks, baits for lures per angler)?**

XX. **YES** \_\_\_\_\_ **NO** \_\_\_\_\_