



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 – Rod Pierce (MN DNR; [Rodney.Pierce@state.mn.us](mailto:Rodney.Pierce@state.mn.us))  
Chair-elect – Jonathan Meerbeek (IA DNR; [jonathan.meerbeek@dnr.iowa.gov](mailto:jonathan.meerbeek@dnr.iowa.gov))

### 2011 Summer Business Meeting Minutes

*ETC/WTC/CTC Joint Meeting at E.B Lyons Interpretive Center at Mines of Spain State Recreation Area, Dubuque, Iowa, July 26-28*

The following notes highlight discussions from the ETC business meeting held 28 July 2011. The meeting followed a full day *Applications of Program MARK Workshop (Instructor: Dr. Bob Klaver, USGS - EROS Data Center)* and another day of technical presentations during a joint meeting between the Esocid, Walleye, and Centrarchid technical committees. ETC members in attendance at the business meeting were K. Koupal, J. Weeks, G. Drach, K. Page, and J. Meerbeek.

Winter Meeting Announcement: Members of the ETC were invited to attend the 72<sup>nd</sup> Midwest Fish and Wildlife Conference during 4-7 December 2011 in Des Moines, Iowa (<http://www.midwest2011.org/>). A great program and turn out are expected. Below are the symposia topics. Please encourage those whom are experts in these areas from your state to attend and possibly contribute. J. Meerbeek can provide those that are interested with contact information regarding the symposia. ETC meeting arrangements have been submitted online for Sunday 4:00-6:00 pm. In addition, a program MARK Workshop instructed by Gary White will be offered at the meeting. More information about the workshop is available at the conference website.

#### Symposium Topic

---

Reconnecting People to Natural Resources

Midwest Mussels

Linkages Between Human Activity and Well-being and Aquatic Resource Quality

Control Strategies Nonnative and Native Nuisance Aquatic Species

Advancements in Walleye Culture for Stock Enhancements

Strategies for Urban Fisheries Management

Altered Landscape Hydrology: Impacts to Rivers and Streams and Associated Biota

Non-residents - Our Perceptions, Attitudes and Policies

Climate Change- What It Means to Management and Research Priorities

Marketing and Messaging- Biologist's Biggest Weakness, and Academia's Role

Biofuels, Wind Energy and Wildlife

Asian Carp Control Strategy Framework: Research results, activities, and updates

---

Sales of the International Pike Symposium: In 2008, the ETC re-published proceedings of the International Pike Symposium (held in Lake Placid, 2006). We published 101 copies at \$50.50 each with the intent to sell them at \$60 each (US) and \$70 ea (CAN). We borrowed \$5100.50 from the NCD to pay for publishing. To date, we have sold 32 copies at \$60 each (\$1,920), 1 copy at \$70 (\$70), 1 copy at \$35 (\$35) and 55 copies at \$30 (\$1650) for a total of \$3,675.00 in sales. Therefore, the ETC still owes \$1,425.50 to the NCD. Twelve copies are still available for purchase @ \$30/copy and have been advertised on the ETC website as well as at Iowa AFS meeting this winter. Remaining copies will be offered at the 2011 Midwest meeting at the current \$30/copy.

Past and Future Leadership: A certificate of appreciation plaque was presented to Rod Pierce (Immediate Past Chair) for his active leadership and enthusiasm for the ETC since the committee's inception. A chair-elect was sought. J. Meerbeek was nominated for another year term and was unanimously voted chair-elect for 2012.

Themes/Location/Dates for 2012 Summer Meeting: Committee members agreed to continue the joint technical committee meeting format for next year's meeting. Topics suggested: GIS, sampling and evaluating recruitment, new tagging methodologies (and hands-on workshop), angler retention and human dimensions, quantitative techniques, and long term databases and trend analyses.

Location and date of 2012 meeting: WTC/ETC/CTC members suggested both Hayward and La Crosse, WI as potential meeting locations for the July 2012 summer meeting. Technical committee chair-elects will finalize meeting location.

Budget: The ETC account (managed by NCD Treasurer Jason Goeckler) had a balance of \$2,104.33 through December 2010. Interest accrued through June 2011 was +\$10.96 and we had a summer meeting expense of -\$25.00 (for a plaque), leaving a balance of \$2,090.29 at the summer 2011 meeting (end of June balance minus plaque expense).

We will continue to market the remaining 12 copies of the pike symposium book, but will have to consider other ways to generate some income at the summer 2011 meeting. K. Koupal suggested asking State AFS Chapters for a one-time donation to help repay the NCD for the Pike Symposium publication. It was also suggested that the ETC should host the 2012 summer meeting workshop and use those proceeds to repay the NCD. J. Meerbeek agreed to investigate these options.

News Items: The University of Wisconsin – Stevens Point is in the process of establishing a Fishery Analysis Center, and one of the objectives of the center is to build a gallery of structures from known-age fish. An on-line version would allow people to sharpen their fish ageing skills.

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 (2010-2011), Jonathan Meerbeek
- Michigan: Chair (2008-2009), Jim Diana
- Michigan: Patrick Hanchin
- Minnesota: Chair (2009-2010) Rod Pierce
- Missouri: Mike Anderson – changed to Craig Fuller
- Nebraska: Keith Koupal
- Ohio: Curt Wagner
- Ontario: Steve Kerr
- Wisconsin: Tim Simonson – changed to Jordan Weeks

Projects

1) Updating our publication of Esocid stocking in North America (1997 publication available @ [http://www.ncd-afs.org/Pages/32/ETC\\_Stocking\\_Proceedings.pdf](http://www.ncd-afs.org/Pages/32/ETC_Stocking_Proceedings.pdf))

Almost all states have been contacted and have returned their completed survey forms. No new information has been provided for this survey.

<u>State or Province</u>	<u>Condition</u>
Illinois	In the process of completing form
Indiana	Returned completed form
Iowa	Returned completed form
Kansas	Returned completed form
Michigan	Returned completed form
Minnesota	Returned completed form
Missouri	Returned completed form
Nebraska	Returned completed form
North Dakota	Returned completed form
Ohio	Returned completed form
ONTARIO	Returned completed form
South Dakota	Returned completed form
Wisconsin	Returned completed form

2). Updating our publication of Esocid angling regulations in North America (1997 publication available @ [http://www.ncd-afs.org/Pages/32/ETC\\_Regulations\\_Synopsis.pdf](http://www.ncd-afs.org/Pages/32/ETC_Regulations_Synopsis.pdf))

Jordan Weeks (WI) has compiled a list of all AFS chapter that have been contacted and those that have sent data. ETC members are urged to contact people they know who are members of those chapters that have not replied and urge them to get the data to Jordan so this project can be completed. This project is now several years behind and the information that

Jordan has received is now outdated. Committee members suggested dropping this project because regulations are frequently being updated and modified by state agencies. A more dynamic approach was suggested (link to each states regulation booklet on ETC website).

*New Project Ideas:*

State and Provincial Muskellunge Management Plans available online (J. Meerbeek). Committee members also suggested working on a “Midwest muskellunge fishing guide” booklet that could be distributed/sold at the 2016 muskellunge symposium in St. Paul (J. Meerbeek will investigate).

State and Provincial Reports:

**Dakotas (S. Chipps)**

High water levels that have contributed to significant recruitment and growth of north pike in the Northern Great Plains (see data below from Paul Bailey).

*South Dakota (Todd St Sauver, South Dakota Game Fish and Parks).*

The production of NOP during this high water event is the biggest news going. On the muskie front, with the flooding of Hwy. 81, we can now assume we have muskies in the entire 81 complex. We have confirmed them in the NW and NE basins (known by us as West and East 81). In an attempt to decrease bird predation, we are also attempting to rear some fall fingerlings at Gavins Point NFH.

*North Dakota (Paul Bailey, North Dakota Game and Fish).*

The spring of 2009 produced some of the best pike natural reproduction that we’ve likely ever seen statewide. Many lakes that were unable to support fisheries during the 1999-2008 drought (chronic winterkill conditions) filled to capacity and 2009 reintroductions via stocking were very successful. Recruitment of the 2010 year-class generally does not appear to be as successful, perhaps due to suppression by the 2009 fish?

Initial growth of the 2009 year class of pike has been extraordinary in most lakes. For example, prior to pike introduction in 2009, Leno Lake contained a dense population of fathead minnows, frogs, and salamanders but no sportfish. Many pike reached 16+ inches in length at 4 months of age.

Both Lake Oahe & Lake Sakakawea experienced tremendous pike natural reproduction in recent years (for the first time since 1994). These fish are now recruited to our standard sampling gear and it appears that northern pike have never been more abundant in the ND portion of Lake Oahe. Both Sakakawea and Oahe continue to produce trophy pike.

We continue to work with muskies on a very limited basis. Unfortunately, northern pike were illegally stocked in one of our muskie waters and a dense pike population has established through natural reproduction. This will likely end future muskie management at this particular lake.

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

## **Iowa (J. Meerbeek)**

Iowa's muskellunge program was established in 1960 and ten lakes and impoundments are currently being managed as muskellunge fisheries. Broodstock muskellunge are captured in Iowa's natural lakes in the spring via 320 foot gill nets (2 ½ in. bar mesh) and reared at the Spirit Lake or Rathbun Fish hatcheries. All muskellunge in Iowa's natural lakes are implanted with a PIT tag and the Jolly-Seber model is used to determine population metrics. In 2011, 372 muskellunge were captured ranging from 24-50 inches in these lakes. Previous research has evaluated rearing techniques and size of muskellunge on the overall contribution of adult muskellunge to the fishery. The spring-stocked yearlings were the most successful group stocked into these lakes. Since 2005, an average of 4,200 yearling muskellunge are annually stocked in Iowa's natural lakes and impoundments. This year, all yearlings stocked into Iowa's natural lakes were implanted with Allflex 12mm FDX 134mhz PIT tags (N = 2,160).

Management concerns in recent years have shifted from muskellunge propagation and survival to muskellunge emigration. The increased frequency of wet springs has substantially increased emigration of adult muskellunge from lake to lake, lake to river, and even worse, reservoir to river. Downstream movement of muskellunge was significant in 2005 when approximately 47% of the Spirit Lake population emigrated into the Okoboji lakes (based on recaptured PIT tagged muskellunge from 2005 to 2006). Since 2000, an average of 8.8% of the adult muskellunge population emigrated downstream. Similar trends were observed at the outlet of this system. Water level control structures prevent movement back upstream 97% of days, thus fish are essentially lost from the system. Similar trends are occurring in managed reservoirs. Iowa DNR staff met with personnel from Biomark and Allflex to discuss ways to evaluate the extent of muskellunge loss by using remote PIT tag readers. Currently, all yearling stocked into the chain of lakes are being implanted with 12mm FDX PIT tags capable of being detected once the fish comes within 16 inches of the antenna array. However, remote reader arrays for the FDX tags for this evaluation ranged from \$25,000 – 55,000 per site. This summer, Biomark and Oregon RFID will unveil the 12mm HDX PIT tags, which may offer a much better detection range and a more cost effective approach to understanding muskellunge movement. However, price estimates for remote antenna arrays built by Biomark will not be reduced using the HDX tags. "Do it yourself" array systems can be constructed much more cost effectively, however continued maintenance may become an issue. On the positive side, the local Muskies Inc. chapters are extremely interested in this project and have offered financial assistance once a project plan is developed.

Emigration questionnaire results: Asked ETC members if known emigration was occurring, and to rank various management concerns (propagation and stocking survival, habitat degradation, harvest regulations, emigration, population genetics, disease, other; 1 highest priority, 5 lowest priority). 22 state representatives responded to the survey. As a whole, propagation and stocking survival was ranked highest (mean rank of 2.9), followed by habitat degradation and harvest regulations (mean rank of 3.3 each). Northern states were generally much more concerned with habitat degradation (mean = 2.4), harvest regulations (mean of 3.1),

and propagation and stocking survival (mean of 3.4; whereas southern states ranked propagation and stocking survival as highest priority (mean of 2.4) and emigration as second highest (mean of 3.2).

A new muskellunge management plan is being developed and should be done this winter. Currently, 6 of the 12 states/provinces have a management plan for esocids.

Northern pike as biomanipulation tools: Iowa is using northern pike as a top level predator in renovated shallow lake systems. Currently, fry, spring stocked (2-3") and fall stocked (8-10") northern pike are being stocked and evaluated. Diamond Lake in Northwestern Iowa was renovated in 2008, stocked with yellow perch in 2009 and 2010 and northern pike in 2010, and averaged 15" by fall with individuals as large as 18". Northern pike YOY were visually observed during a plant survey this early summer.

A PIT tagging project has been started for northern pike in Spirit Lake. Very little information on native northern pike populations in this region is available. Population parameters will be estimated using the Jolly-Seber open population model. In addition, Spirit Lake and the Okoboji lakes have three unique color phases for northern pike (spotted, silver, leopard). We want to explore how common this is in their native region.



Figure 3. Northern pike color phases in Spirit Lake, April 2011.

### **Indiana** (D. Kittaka)

Jed Pearson, IDNR, District 3 Fisheries Biologist  
IDNR Northeast Regional Office  
Columbia City, Indiana

### *DNR studies muskie growth in Lake Webster*

NORTH WEBSTER - A fish-tagging study being done by the DNR Division of Fish & Wildlife is shedding new light on how fast muskies grow in Lake Webster.

The results could affect the number of muskies stocked in the popular 774-acre lake in northern Kosciusko County. The results will also help DNR fisheries biologists determine if the 36-inch minimum size limit should be increased.

"Based on what we know already, Lake Webster has one of the densest populations of muskies in the Midwest," said Jed Pearson, DNR fisheries biologist for the area. "That's because we stock fingerling muskies each year in the lake at the rate of five per acre." Other states typically stock one or two muskies per acre and sometimes do so every other year. "What we don't know is whether the high density of muskies is affecting their growth," Pearson said. "A lake can hold only so many fish. When fish densities get too high, there may not be enough food to go around." According to Pearson, some anglers claim the average size of muskies in Lake Webster is declining and fewer trophy-size muskies, those more than 46 inches long, are being caught. Although length data recorded each spring from adult muskies captured during egg-taking operations do not back the claim, DNR biologists are taking a closer look at muskie growth in Lake Webster. "Adult muskies average around 36 inches long but we occasionally catch some over 46 inches long during our hatchery egg-taking operations in spring," Pearson said. "What we want to know is how much a muskie grows each year and how its growth rate in Webster compares to other lakes." To study muskie growth, Pearson has tagged more than 1,300 muskies with tiny PIT (passive integrated transponder) tags since 2005. Each fish is measured before the tag is inserted into muscle tissue along the dorsal fin. The tag has a unique numerical code that's read with a special electronic scanner. By noting changes in size from when a muskie is first tagged compared to when it is recaptured, biologists get an accurate account of how much the fish grew. "Although we're just now getting long-term data on growth, we've already seen a big difference between male and female muskies," Pearson said. Most male muskies stop growing after they reach 36 inches long. In contrast, females continue to grow about 1-2 inches per year after they reach 36 inches. Biologists call this "sexual dimorphic growth." They think it is an evolutionary adaptation in how a fish uses energy and helps the species survive and reproduce. The difference has management implications. "This means we may want to ignore the males. For management decisions, we plan to focus on how big the females grow," Pearson said. "As long as female muskies get bigger at normal rates, we don't think there is growth problem."

#### *Muskie stockings supported at Upper Long Lake*

ALBION - Local residents and avid muskie anglers have agreed to a five-year commitment to continue a club-sponsored muskie stocking program at Upper Long Lake in Noble County. The agreement, along with approval from the Department of Natural Resources, calls for 170 muskie fingerlings to be stocked each year to maintain muskie fishing opportunities at the 86-acre natural lake.

The muskies will be purchased by the Webster Lake Musky Club from a commercial hatchery in Wisconsin. Since 2002, the club has stocked nearly 3,700 muskie fingerlings in the lake at a typical rate of five per acre per year.

Last year some lake residents complained too many muskies were present, and the stocking rate was too high. Opponents also were concerned that muskies were of little interest and value to most anglers, were harming other fish, and were reproducing at high levels. To

address these concerns, DNR biologists conducted a study at Upper Long Lake last year and held discussions between the two groups. Based on data compiled by the DNR, 33 percent of anglers who fish at Upper Long Lake fish for muskies. Muskie anglers made 542 fishing trips to the lake, generating \$35,000 of estimated economic value through their purchase of bait, tackle, fuel and other items.

Anglers caught 145 muskies, 17 of which were 36 inches long or longer. The anglers typically fished an average of 10 hours to catch one muskie. Although muskie fishing was more popular among visiting anglers, 65 percent of all anglers favored the stocking program.

According to the DNR, no major shifts have occurred among other species in the lake. The data suggested that bluegills and crappies increased in number after the muskie stocking program began. The number of bass decreased. The bass decline, however, occurred only among small fish. Numbers of 12- to 14-inch bass rose 48 percent and numbers of 14- to 18-inch bass nearly tripled after muskies were stocked. Biologists found no evidence that muskies have reproduced in the lake, although several redbfin pickerel are present. These fish resemble small muskies.

Tom Meyer, IDNR, Assistant Property Manager  
Fawn River State fish Hatchery  
Orland, Indiana

#### *Muskie egg collection summary at Lake Webster, Kosciusko Co, 2011*

Lasting just seven calendar days, the Lake Webster, brood-stock operation was swift and successful. There were 169 muskie collected with a length range of 29.5 to 47.0 in. Off to a roaring start with over 600,000 eggs collected on day one, the single day egg take record established in 2010 fell this year with over 700,000 fertilized April 9<sup>th</sup>.

Of six nets used this season, the two set at the inlet of Lake Webster, in an area called Backwater Lake, produced this first day bonanza. Though only 19% of these proved viable, their number provided 113,475 toward Fawn River State Fish Hatchery's assigned goal of 500,000 hatch-ready eggs.

Considered separately, eggs collected from the remainder of the run exhibited an average viability of 34%, near the long term average of 40% expected. The rapid temperature fluctuations of the shallow Backwater area may explain this discrepancy, as all other parameters were consistent.

A total of 513,975 viable eggs were transferred to East Fork State Fish Hatchery, Montgomery, IN for rearing. .

David Kittaka, IDNR, District 5 Fisheries Biologist  
Avoca State Hatchery  
Avoca, Indiana



### Bathometric lake mapping of muskie strip pit lakes conducted in 2011

Partnered with the Indiana Lake and River Enhancement (LARE) program, Indiana Division of Fish and Wildlife (IDFW) utilized the LARE hydroacoustic boat to map reclaimed coal strip pits that are involved in muskie stocking programs. Southern Indiana reclaimed and abandon coal strip mine lakes are some of the larger complexes of water that the IDFW manages for hunting and fishing. Often connected to a river system these pits have an abundant and diverse forage base. Stocking programs for these lakes began as early as 1997 and as recent as 2008.

### **Michigan (P. Hanchin)**

1. We are working with constituents and angler groups on a possible revision to northern pike regulations. Organized groups have made their own proposals and Fisheries Division will present the positives/negatives of each proposal and their own proposals. Review will include discussion at our Coolwater Regulations Review Committee (internal/external members) as well as a public comment period.
2. A U of M graduate student is finishing up his thesis on seasonal movement/distribution of the GL muskellunge population in the Antrim Chain. For more information, please contact John Molenhouse ([jmolen@umich.edu](mailto:jmolen@umich.edu)).

The MDNR initiated a study on the genetic structure of remnant and naturalized populations of Great Lakes muskellunge and the introgression between stocked northern and Great Lakes strain muskellunge. There is concern that stocking efforts may not be compatible with maintenance of the genetic integrity or sustainability of remnant populations of a native muskellunge subspecies. Presently, little information is available on the genetic characteristics of suspected remnant Great Lakes muskellunge populations, evidence for spatial genetic structure among these populations, or evidence for mixing and inter-breeding between resident and stocked muskellunge. The general objective is to characterize levels of diversity within and among populations of Great Lakes muskellunge and to quantify evidence for mixing and introgression between native Great Lakes and stocked Northern muskellunge. For more information, please contact Kregg Smith ([smithk34@michigan.gov](mailto:smithk34@michigan.gov)).

3. We are raising only Great Lakes muskellunge this year and are beginning a Great Lakes brood source program for inland lakes.
  - Collection effort occurred from April 25-June 5 on Lake St.Clair/Detroit River
  - 41 fish captured—28 with trap nets; 13 electro-fishing
  - 229 net lifts total both locations—muskellunge catch rate (0.18/lift) lowest ever recorded for LSC (10-year average = 1.05). Issues were fluctuating water temperature, debris in river nets, boats hitting nets, etc.
  - 4 ripe females caught and spawned with 6 different males; 3 of the females were partially spawned out
  - Fish health samples collected from all fish spawned and from 8 fish from LSC and 11 fish from Detroit R.—all samples negative for VHS and reportable pathogens.
  - 174,000 eggs collected on 5/26, 5/31, and 6/2 and transferred to Wolf Lake SFH

- 29,000 fry hatched. Overall survival low (17%) largely due to one poor lot.
- Fingerlings will be transferred to a lined rearing pond when they reach 4.0-4.5 in (late August)
- Fall fingerlings will be PIT tagged and stocked in November as 10 inch fish inches
- WDNR assisted with broodstock collection efforts for several days in early May
- 80,000 MUS-GL were available from Wisconsin in early June, but fish health testing was not complete at the time when the fish needed to be transferred to Michigan (Wisconsin didn't have the space or manpower to hold them until test results were available), so Michigan could not get these fish (APHIS importation rules)
- East Fork SFH, Indiana, expects to have 15,000- 25,000 northern muskellunge available to transfer to Michigan in late July; these fish will be put in lined rearing ponds and stocked in October as 10-12 inch fish

### **Minnesota (R. Pierce)**

A study of habitat overlap among species in a coolwater fish community was initiated in Elk Lake, Itasca State Park, in spring 2011. Ultrasonic transmitters were implanted in muskellunge, northern pike, walleye, and ciscoes, whose temperatures and depths will be transmitted to automated hydrophones in the lake. Researchers are Andy Carlson, Jerry Younk, Peter Jacobson, and Rod Pierce. Elk Lake is also the site of a long-term muskellunge PIT tagging study by Jerry Younk.

Archival tags recording fish temperatures and depths were also implanted in northern pike in Shingobee Lake in spring 2011. We will attempt to retrieve the archival tags during spring 2012. Researchers are Bruce Carlson, Dallas Hudson, and Rod Pierce.

We received a notable tag return from a northern pike in Lake of the Woods during spring 2011. The fish was tagged in spring 1996, so it was "at large" for 15 years and was likely to be over 20 years old this spring. Total length of the fish was 33 inches when it was tagged and 38 inches when recovered 15 years later. The tag return provided a unique glimpse into the potential longevity of northern pike.

The Minnesota DNR proposed muskellunge introductions in five new waters and held public reviews of the proposals. After an extensive (and sometimes contentious) public comment process, only two of the waters were recommended for stocking.

The state legislature initiated bills to 1) reduce the number of lakes with special regulations for northern pike, and to 2) eliminate the ban on darkhouse pike spearing at Cass Lake. The intent of the spearing ban when implemented in 1987 was to protect muskellunge. Both bills were rejected by Governor Dayton who argued that the legislature had not allowed for adequate public input.

The final report of a human dimensions survey on northern pike fishing and management in Minnesota should soon be available from the University of Minnesota. The survey was conducted last summer and fall, and had components covering both angling and darkhouse spearing. Researchers were Susan Schroeder, David Fulton, and Jason Moeckel.

## **Missouri (C. Fuller)**

Currently, four lakes in Missouri are now managed for muskies: Pomme de Terre Lake (7,820 ac.), Fellows Lake (820 ac.), Hazel Creek Lake (530 ac.) and Lake 35, Busch Conservation Area (62 ac.). Standard fyke netting surveys were conducted at Pomme de Terre Lake and Fellows Lake this spring and the results are as follows:

Pomme de Terre Lake: 30 net-days resulting in a total catch of 73 muskies or a catch rate of 2.4 fish/net-day. Proportional Stock Density was 66%, RSD-36 = 26% and RSD-40 = 11%.

Fellow Lake: 28 net-days resulting in a total catch of 61 muskies or a catch rate of 2.9 fish/net-day. Proportional Stock Density was 93%, RSD-36 = 38% and RSD-40 = 17%. The largest fish captured (and the first Missouri Muskie over 50") was 51.0 inches and weighed 35 pounds (see the attached article that appeared in the May 2011 issue of MUSKIE magazine).

As outlined in the Missouri Muskie Management Plan; this fall, 12-14 inch muskie fingerlings will be stocked at a rate of 1 fish/acre at Fellow Lake, Hazel Creek Lake and Lake 35, Busch CA. Pomme de Terre Lake will be stocked with 4000, 12-14 inch fingerlings (0.5 muskies/acre).

In the fall of 2010 Pomme de Terre Lake experienced a five foot draw-down so that a construction project in the stilling basin below the dam could be completed. During the draw-down period shallow water habitat made from wooden pallets were placed. See the attached article that appeared in the May 2011 issue of MUSKIE magazine.

We are currently summarizing data to complete a report on a strain evaluation. "Muskellunge are native to a large area in North America, ranging from Canada all the way south to Kentucky. Originally, muskies stocked in Missouri came from several areas including Pennsylvania, Michigan, and Minnesota. "Northern" muskies living in their native cooler climates tend to have somewhat different life histories than those living in warmer climates, like Missouri. The "northern" strain of muskies that are stocked in Missouri typically grow faster, but don't live as long and often don't reach the maximum sizes seen in their northern native range. While northern muskies stocked in Missouri provide many hours of fishing enjoyment, they rarely, if ever, exceed 50 inches in length, which is a "trophy" goal for many muskie anglers.

Kentucky muskies are native to a climate similar to Missouri and often reach 50 inches or more in length. This was the impetus for MDC to begin a muskie strain evaluation. Would the strain of fish native to Kentucky (that are perhaps more adapted to grow to 50 inches in warmer climates) be more suitable to stock in Missouri? Starting in 2002, Kentucky strain muskies were stocked along with the typical Missouri source fish in Pomme de Terre and Fellows lakes. Kentucky muskies were also stocked at PDT in 2003 and at Fellows in 2004 and 2005. Each time Kentucky muskies are stocked, Missouri source muskies are stocked in roughly equal numbers. Fish are marked either with a freeze brand visible on the fish or with coded wire tags implanted in the fish. By marking the fish in distinct locations, growth can be compared between the two strains and among years."

## **Nebraska (K. Koupal)**

Nebraska has limited use of esocids within our systems. Even this limited use has come with some headaches. One main issue has been the focus of our efforts this past year.

Northern pike production has hit a real snag. There has been a steady 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 isolated the specific problem. Several variables have been isolated and tested in separate lots including salinity, broodstock male and female sources and little success has been found to date. At the present time, we have enlisted the help of federal research facilities to specifically look at potential toxicants within the system, warming trends within the system, impacts of water level adjustments and who knows what else. Will keep folks updated on our efforts.

We still are producing limited muskie for stocking, but have had to back off of total numbers or down to every 3 years instead of every 2 years due to the expense of raising adequate size muskie in our hatchery system.

## **Ohio (K. Page)**

Presented a paper on comparing muskellunge angler catch reports to trap net data for an Ohio Reservoir. Emigration of fish from reservoir to river also is a problem in Ohio. In particular, ~3,000 blue catfish were tagged and 50 were fitted with transmitters and all 50 fish moved downstream after a high water event.

## **Ontario (S. Kerr)**

### Lake Simcoe Restoration project

- multi-year stocking project (initiated in 2005) designed to re-introduce muskellunge into Lake Simcoe where they had been extirpated.
- eggs from three families collected from Gloucester Pool (downstream of Lake Simcoe on Trent-Severn waterway) in spring of 2011
- fish currently being reared at Fleming College in Lindsay - good hatch and survival to date.
- hope to stock 1,500 fall fingerlings this fall.
- all fish were destroyed last year when lymphosarcoma was discovered.
- contact for additional information is Jason Borwick ([jason.borwick@ontario.ca](mailto:jason.borwick@ontario.ca); 905-713-7404)

### Volunteer Muskellunge Angler Diary Program

- conducted annually in conjunction with Muskies Canada members
- 2010 represented the 32nd consecutive year that this program has been conducted.
- Anglers reportedly exerted 17,999 rod hours of angling effort on 65 different Ontario waterbodies to catch a total of 946 muskellunge (CUE = 0.053 fish per rod hour).
- There were 159 muskellunge which exceeded 50 inches in length.
- an electronic report form (to be used in addition to paper forms) is being implemented on a trial basis in 2011.

- contact for additional information is Steven Kerr ([steve.kerr@ontario.ca](mailto:steve.kerr@ontario.ca) 705-755-1205)

*Survey of Muskellunge Distribution and Management in North American Jurisdictions*

- survey conducted in fall 2010/winter 2011.
- survey was designed to document muskellunge distribution, compare management approaches(e.g., stocking, regulations, etc.), and identify current issues.
- responses received from 59 individuals representing 56 different North American jurisdictions.
- information summarized in report format (see citation below).
- contact for additional information is Steven Kerr.

*Recent Esocid Publications*

Kerr, S. J. 2010. Muskellunge of the Ottawa River. Fisheries Policy Section, Biodiversity Branch. Ontario Ministry of Natural Resources. Peterborough, Ontario. 21 p. + appendices.

Kerr, S. J. 2011. Distribution and management of muskellunge in North America: an overview. Fisheries Policy Section, Biodiversity Branch. Ontario Ministry of Natural Resources. Peterborough, Ontario. 22p. + appendices.

Kerr, S. J., D. Heinbuck, and S. Powell. 2011. Ontario's 2010 volunteer muskellunge angler diary program. Ontario Ministry of Natural Resources and Muskies Canada Inc. Peterborough, Ontario. 10 p.

**Washington (B. Bolding)**

The esocid situation in Washington State remains similar to the report from last year. There are two main issues in Washington: management of our preferred species (tiger muskie) and management of an unwanted species (northern pike). The Washington Department of Fish and Wildlife (WDFW) continued stocking seven lakes across the state with tiger muskies. The target number for stocking statewide is 6,000 1-year-old, 12+-inch fish. This works out to be about one fish per two surface acres. The program also continues to increase in popularity and use every year. In 2011, there are 16 tiger muskie tournaments scheduled across the state in addition to the general number of people that have reported fishing for tigers (approximately 16,000 people, or 3% of licensed anglers, as reported in the last angler preference survey).

The WDFW conducted two pike-related surveys on Box Canyon Reservoir (Pend Orielle River) this spring. The Pend Orielle River is the main corridor for pike entering the state. The two surveys included a pike-specific gill net survey and a general fish community survey consisting of gill netting, fyke netting and boat electrofishing. Although the data is still being analyzed, both surveys indicate a rapidly increasing pike population and decreasing numbers of other (forage) species. Although having northern pike in Box Canyon Reservoir is disconcerting because of the presence of bull trout and westslope cutthroat, the greater concern is movement

downstream into the main stem of the Columbia River and illegal introductions into other waters across the state. Within the last year, pike have been found in two lakes in Spokane County, about one hour's drive south of Box Canyon Reservoir. In hopes of preventing or at least slowing down illegal introductions, WDFW is putting together a public outreach and education campaign addressing illegal introductions in general and northern pike specifically. Any shared ideas or experience with control measures or public outreach from other states would be greatly appreciated. Please contact Bruce Bolding directly at 360-902-8417 or [Bruce.bolding@dfw.wa.gov](mailto:Bruce.bolding@dfw.wa.gov)

### **Wisconsin (J. Weeks)**

Beginning in 2012 Wisconsin will have a 40" minimum statewide size limit. This proposal had been in the works for several years and passed the WI Conservation Congress Hearings this spring. As a result, approximately 600 waters would have a 40-inch minimum size restriction, 20 waters would have a 28-inch minimum size restriction (see rule change below) and 20 waters would continue to have a 45 or 50-inch minimum size restriction. Along with that rule change, several other changes were made:

- Define a quick-strike rig and require its use when fishing with an 8-inch or longer minnow as bait. Because we are only including statutory minnows as bait (and not bluegill, bullheads, etc.) there should be no conflict with catfish anglers. Second, we are proposing to continue to allow the use of (and not restrict) circle hooks - they would be exempted by rule and, in addition to quick-strike rigs, would continue to be legal for use in minnows 8" and larger.
- Decrease the minimum size restriction to 28 inches for muskellunge on ten slow growth muskellunge waters: English and Mineral lakes (Ashland county), Bearskin, Booth, and Squaw lakes (Oneida county), Julia Lake (Oneida and Forest counties), Butternut and Solberg lakes (Price county), Spider lake (Sawyer county), and Upper Gresham lake (Vilas county).
- Increase the minimum size restriction from 40 to 50 inches for muskellunge in Rice and Stump lakes (Barron county).
- Increase the minimum size restriction from 40 to 50 inches for three spotted muskellunge brood stock lakes: Archibald and Anderson lakes (Oconto county), and Big Elkhart lake (Sheboygan county).
- Increase the minimum size restriction from 40 to 50 inches for muskellunge in Redstone lake (Sauk county).

In addition to those changes we have been working with Michigan to obtain Great Lakes spotted muskie fingerling for our brood lakes. A small number of Lake St. Clair stock will be headed to WI later this fall.

The Dane County fish Team lead by Kurt Welke continues to evaluate stock performance between leech lake and WI stock fish – All stocked fish have been given PIT tags. This spring while surveying Lake Monona 239 muskies were captured, about 70 were of the correct size to potentially bear tags and begin yielding comparable age -growth data ...however, only Wisconsin stock (Gov Thompson) were recovered ( 7 fish total) - the fish are still 1 year "out" from recruiting to the nets.

University Research:

2010-11 Wisconsin DNR Survey of Wisconsin Muskellunge Anglers

We sent notification packets to individuals in each of the following three categories: 1) resident anglers; 2) non-resident anglers and 3) members of Wisconsin musky clubs. Notification packets were sent to 1,500 resident anglers and 1,500 non-resident anglers that were selected at random from all anglers that had purchased a Wisconsin fishing license during 2010. Packets were sent to 1,184 musky club anglers. We received completed surveys from 246 resident anglers (17% response rate), 251 non-resident anglers (18% response rate), and 578 musky club members (49% response rate). A completed version of the report should be available at the end of August. Responses to a few of the questions are presented below:

- Between 39-47% of respondents in the three angler groups reported that 2010 was a typical year in terms of the amount of time they spent musky fishing, while 37-49% of respondents reported that they fished for muskies less in 2010 than during a typical season. Only 8-10% of anglers reported that they spent more time fishing for muskies in 2010 in comparison to a typical season.
- Respondents in all three angler groups reported releasing  $\geq 95\%$  of the muskies they caught during 2010.
- More than 50% of respondents believe that all of the muskies they release survive.
- Between 36 and 43% of resident and non-resident anglers indicated they would be willing to purchase a stamp in order to fish for muskies if the money supported the DNR musky program; 82% of musky club anglers indicated they would purchase a stamp.
- Between 54 and 74% of the anglers in each group indicated that they would support mandatory harvest reporting for muskies that are harvested in the state of Wisconsin.

Daniel Isermann- Fisheries Analysis Center, UWSP

*These minutes are respectfully submitted by J. Meerbeek.*