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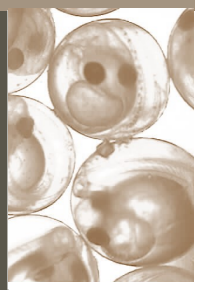
in this issue

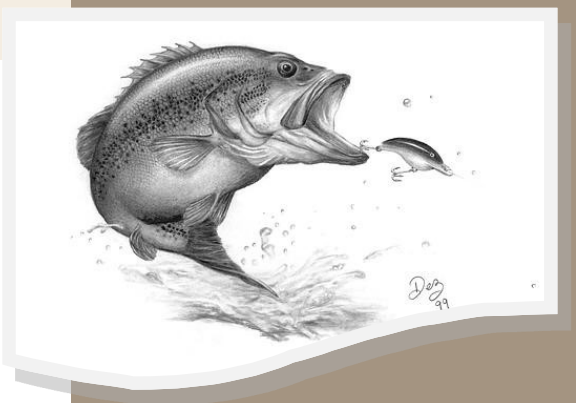
Iowa Chapter of the American Fisheries Society

Lateral Lines



current topics

Check out the Iowa DNR Facebook Post regarding a well-traveled Paddlefish!



Cyclone Corner

- Topeaka Shiner genetics
- Bass Tournament Population Level Effects due to Recent Regulation Changes
- Subunit Updates
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Our Mission:

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

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President's Corner

Scott Grummer

First Impressions, Lasting Impact

As I am writing my first President's Corner, lakes have frozen over in Northern Iowa. As one season comes to a close, another one begins. This is similar to leadership changes within the Iowa Chapter of the American Fisheries Society. I would like to thank Jonathan Meerbeek and Jeff Kopaska for their excellent tenures as our Chapter leaders. Their efforts have helped the Iowa Chapter move forward with strength and opportunity for our membership.

As we all look into the future, involvement in a professional society like AFS will gain importance. There are continually new threats to our aquatic resources. Getting involved with Chapter or parent Society programs will improve you professionally and strengthen us as a Chapter. I encourage each member to consider running for an office, joining a technical section, or attending a continuing education opportunity.

Reflecting back on my 22+ year career with the Iowa DNR Fisheries Bureau, I cannot help thinking about all the fisheries professionals, science teachers, and friends that led me down this road. What started as a recreational passion as youngster, grew to very fulfilling career. I encourage everyone to take the time to mentor someone showing interest in the fisheries field. A few minutes of your time can change someone's life and goals.

To date, I have been working on setting the IA Chapter meeting for 2019. I am pleased to announce we will be meeting with the Iowa Chapter of The Wildlife Society at Honey Creek Resort on February 12thand 13th, 2019. Please consider presenting, either orally or via poster (deadline Dec 21st). It is an excellent opportunity to show case work being done to improve fisheries, habitat, or water quality. A continuing education opportunity

is also in the works. There will be more information and details to come on this class.

Enjoy the Holiday Season with family and friends. I hope to see you at the winter meeting in February.

~Scott Grummer

A Small Project has Big Impact for Anglers and Wildlife

Mike Siepker (Iowa DNR) and Tom Murray (Iowa Coldwater Conservancy)

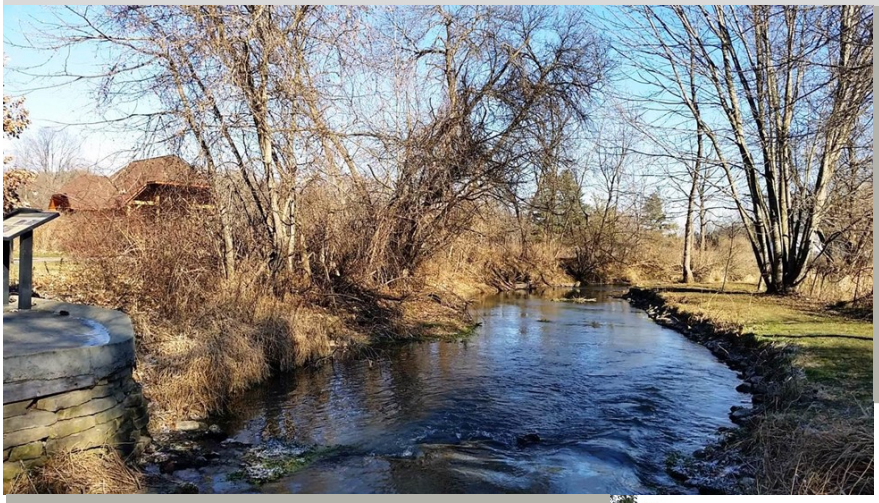
It all started with an idea to improve fish habitat and angler access along Trout Run, a popular fishery just south of Decorah. It quickly developed into a partnership between the Iowa DNR, Trees Forever, Alliant Energy, Iowa's Coldwater Conservancy (ICC), Friends of the Decorah Fish Hatchery, and the Iowa Driftless Chapter of Trout Unlimited.

In 2016, Trout Run was the third most popular trout stream in the state hosting over 25,000 angler trips that year. It is especially popular since it is stocked with catchable trout weekly from April through October, has a healthy population of wild Brown Trout, and has more universal angler access than any other stream in the state. Over time, one section of Trout Run had become over-grown with undesirable trees and brush that offered very little wildlife benefit and limited angler access along the stream.

The project scope included clearing brush and reshaping the bank to a flatter slope before seeding down to native grasses and about 50 different wildflower species. Wildlife-friendly trees were then planted along the project making the site a future haven for pollinators and wildlife. Along the stream, trees that were originally removed from the site were recycled by burying their trunks in the bank but leaving their roots extending into the stream to provide cover for trout.

Prairie cordgrass plugs were also planted along the stream and once mature, will provide overhead cover to trout living in the stream. After heavy construction work was completed, members of ICC and Iowa Driftless TU worked with Iowa DNR Fisheries staff and other volunteers to spread grass and wildflower seed, plant trees, and spread straw mulch on the entire site. The area will be closed to anglers through the summer of 2019 to give plants time to establish.

Project costs totaled $7,156 and included over $2,500 in volunteer labor and over $930 of donated materials. Trees Forever supported the project with a $2,000 Working Watersheds: Buffers & Beyond grant and the Friends of the Decorah Hatchery also pro-vided financial support to complete the project.



Left Photo: Trout Run at the Decorah Fish Hatchery had become overgrown with undesirable vegetation that had little wildlife benefit and made angler access difficult.

Right Photo: Trout Run after habitat improvements.

Fish Habitat in Iowa's Streams

Jeff Kopaska, Fisheries Biometrician, Iowa DNR

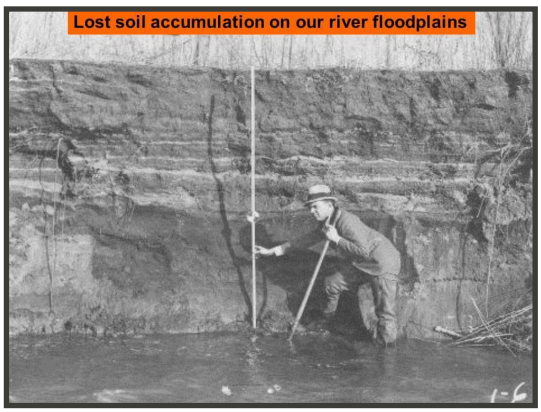
The first surveys of Iowa indicated that the land was "one of great beauty. … In every part of this whole District, beautiful rivers and creeks are to be found, whose transparent waters are perpetually renewed, by the springs from which they flow. Many of these streams are connected with lakes; and hence their supply of water is remarkably uniform throughout the seasons. All these rivers, creeks, and lakes, are skirted by woods, often several miles in width, affording shelter from intense cold or heat to the animals that may there take refuge from the contiguous prairies. … of Fish there can never be any scarcity. Every stream is filled with them; and among them may be found the pike, the pickerel, the catfish, the trout, and many other varieties" (Lea 1836).

Similar descriptions were provided by early settlers along the Skunk River north of Ames. "The banks bordering the river were not very high. Either side of the river was a bottom land heavily timbered with black walnut, butternut, ash, oaks, and other hard woods. … The woods were full of game, such as squirrels, rabbits, wood chucks, raccoon, etc. The streams were swarming with fish of many kinds. We caught them in large numbers with hook, spear, net, seines, and traps. … There were pike, pickerel, bass, redhorse suckers, large blue catfish, boolponts (bullheads), sunfish, eels, etc." (Kegley 1936). Early accounts of Grundy County were similar, "Between the watersheds and at distance of two or three miles from one another were little clear brooks with banks of black sod, their waters flowing on floors of bright colored glacial pebbles; their expansions little pools covered with the pads of the yellow pond lily or lotus. These streams could be stepped across almost everywhere. They were beautiful little brooks, so clear, so over-arched with tall grasses and willows, so plaided with the colors of the pebbles in the sun, so dark and mysterious in the shade; with secret pockets under the soddy banks for the shiners, pumpkin-seeds, dace, chubs and other small fish which populated the pure waters" (Quick 1925).

These accounts do not resemble the wide, shallow streams with muddy banks and turbid waters that generally persist in Iowa's rivers and streams today. In fact, these changes to current conditions began long ago. "I have been informed that many streams, formerly deep and narrow, and abounding in pickerel, bass and catfishes, have since grown wide and shallow, while the volume of water in them varies greatly in the different seasons, and they are now inhabited only by bullheads, suckers and a few minnows. The breaking of the native sod for agricultural purposes has especially affected the smaller streams in the respect, while the construction of ditches and the practice of underdraining have had their effects upon the larger ones. Moreover the constant loosening of the soil, in farming, tends to reduce it to that condition in which it is readily transported by the heavy rains to produce muddy currents" (Meek 1892).

As the quality of fish habitat in Iowa's rivers and streams degraded, fish communities changed also. Early accounts, included above, mention more game fish, while Meek's account illustrates the transition. Menzel (1981) noted that by 1900, Iowa streams had experienced "the replacement of desirable food and game fishes by ecologically tolerant rough fishes," likely resulting from agricultural land use practices, hydrologic alterations, unmitigated sewage export from urban areas and unlimited fishing. These observations are supported by recent research that indicates human-induced sedimentation alters stream fish communities (Sutherland et al., 2002). Fortunately, improved soil conservation in watersheds, and regulation of point source pollution, had resulted in certain parameters showing improved stream water quality by the end of the 20th century, as outlined in recent publications (Jones and Schilling 2011; Schilling and Drobney 2014).

These documented improvements in water quality could lead to the logical conclusion that fish habitat and fish communities should also be responding positively. Unfortunately, that is often not the case, because sedimentation from eroding fine materials still blankets stream bottoms and the altered hydrology has resulted in extremely "flashy" systems. This "fishy" problem is a battle being fought against an issue of historic proportion. Recent studies have documented post-settlement soil losses of ~70 tons/acre in Des Moines lobe watersheds (Yan et al., 2010; Heathcote et al., 2013), and substantial amounts of those eroded upland soils currently reside as alluvial deposits in downstream floodplains. The 2012 issue of Getting Into Soil and Water shows a photo of this phenomenon (Tomer, p. 27), illustrating many feet of sediment deposited next to the stream channel, and a bare bank ready to erode at the next high water "flash". While similar research has not been undertaken in all of Iowa's ecoregions, it is fair to assume that greater rates of



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The Carp Are Dying!

Scott Grummer, Clear Lake Management Team Leader, IA DNR

Recently there have been fish kill reports in the Upper Midwest impacting only Common Carp. The past two summers, the Minnesota DNR had carp fish kill reports in Southwest Minnesota. A researcher at the University of Minnesota, Nicholas Phelps, has found viruses are causing these kills.

Koi herpes virus (KHV) and Carp edema virus (CEV) have been found in the carp mortality events. These viruses are a major concern for koi/carp aquaculture and locations around the world where carp fishing is popular.

In September 2018, a Common Carp kill was reported to the Clear Lake Fisheries Office at Upper Pine Lake in Hardin County. A fresh sample was sent to Phelps' Lab at the University of Minnesota. The results came back with CEV causing this mortality. This added Iowa to a short list of states with the virus detection (New Jersey, Wisconsin, and Minnesota). In addition, the virus has been documented in Koi, mostly in California.

Upper Pine Lake September 2018

There is a high likelihood that many populations of carp are carrying these viruses. It is still unknown what causes the virus to become lethal. CEV has likely been present in populations since Common Carp were brought from Europe. KHV, a newer virus, has possibly been introduced by sporadic releases of Koi. Environmental or ecological stressors may cause the virus to become lethal to individual fish, but more research is needed to determine that.

Ancient Bison *(Bison antiquus)*

Scott Grummer, Clear Lake Management Team Leader, IA DNR

This spring there was a unique find by the contract commercial angler on Clear Lake. On a seine haul at the west end of the lake, a bison skull came in with the net. This skull was likely deep in the lake sediment and became partially exposed with a lake dredging project 10 years ago.

The skull, remarkably preserved, was cleaned up. After the pictures of the find were circulated around, the question arose, "Was this specimen an American Bison or something older?" As it turns out, it appears to be what is called an Ancient or Antique Bison. This animal was likely grazing the shoreline of Clear Lake 10,000+ years ago.

A bone sample was recently sent to a researcher from Yale University for further evaluation. It will be interesting to see what additional information we learn from this animal. The skull is going to be displayed in the public aquarium at the Clear Lake Fish and Wildlife Office starting in the spring of 2019.

Cyclone Corner

Topeka Shiner Genetic Diversity and Population Structure

Alex Bybel, MS (Graduated December 2018)

The Topeka shiner (Notropis topeka) is an endangered cyprinid native to the Midwestern United States that has experienced drastic reductions in distribution due to stream alterations that have eliminated both instream and off-channel habitats, leaving smaller, more isolated populations throughout the range. These fragmented populations can exist genetically as isolated populations with no gene flow or as metapopulations that are groups of discrete subpopulations that maintain some level of gene flow. Populations with low genetic diversity are at a higher risk of extinction because of an inability to adapt to threats such as environmental change.

I used a total of nine Topeka shiner polymorphic microsatellite loci to assess genetic diversity, analyze population structure, compare migration rates across the range, and characterize metapopulation structure. Rangewide analysis of population structure revealed eight distinct populations with low to moderate levels of genetic diversity that can serve as management units for conservation (Figure 1). Estimates of historical and contemporary migration indicated that populations were more connected thousands of years ago whereas current populations have almost no gene flow among them. These results suggest habitat destruction has led to a reduction in genetic connectivity across the range of Topeka shiners, leaving the remaining populations geographically isolated. Analysis of genetic structure within the Rock River and Boone River basins indicated deviations from Hardy-Weinberg Equilibrium, significant genetic isolation by distance, and low but significant genetic differences between sites. These results suggest Topeka shiners in these basins are acting as metapopulations composed of discrete subpopulations. Analysis of migration patterns indicate that subpopulations

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Topeka Shiner continued….

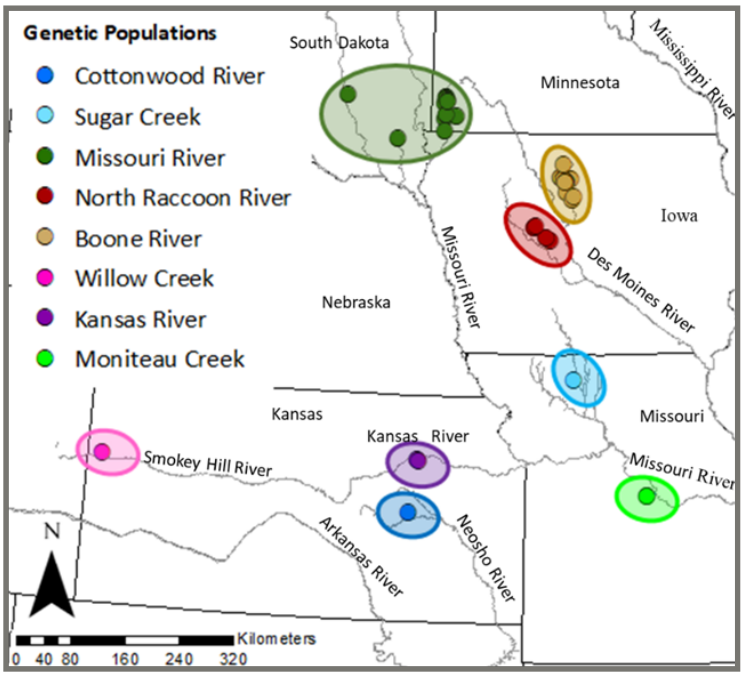

Figure 1. Topeka shiner populations indicated by microsatellite analysis. Solid dots represent individual sites and transparent circles and color represents genetically distinct populations.

spread over larger areas and with more individuals may be acting as potential populations sources that export individuals to other subpopulations (Figure 2).

Overall, this study suggests that once widely distributed and well interconnected throughout the Midwest, landscape, floodplain, and stream alteration has reduced the distribution of Topeka shiners to eight genetically isolated populations with low to moderate genetic diversity. Although full reestablishment of historical connectivity may not be feasible due to large geographic distances and anthropogenic barriers between populations, increasing the amount and distribution of suitable habitat to maintain current populations and allow natural reestablishment of Topeka shiners is a worthy goal. The maintenance of genetic diversity and adaptive potential is crucial to the survival of Topeka shiners in a changing environment.

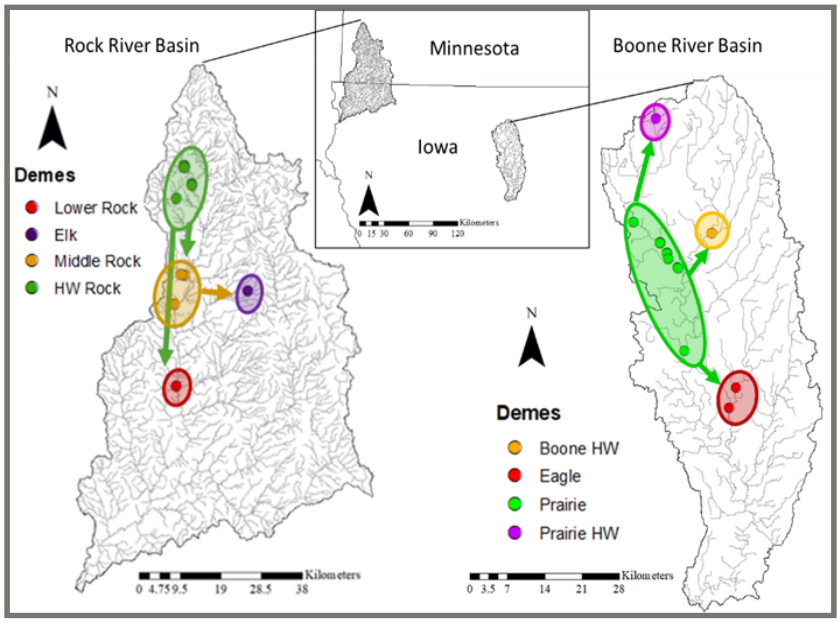

Figure 2. First generation migrations in the Rock River Basin (left) and Boone River Basin (right). Distinct subpopulations are represented by circles and circle color. Individual migration events indicated by arrows. Arrow color represents the subpopulation that a migrant belongs to genetically and arrow direction indicates the subpopulation where the migrant was sampled.

Population-level effects of bass tournament regulation changes in Iowa

Brandon Maahs, MS student

Prior to 1972, black bass tournament handling protocols resulted in high pre-release mortality, causing concern for black bass populations among anglers and fisheries managers. Efforts have since been made to improve tournament bass confinement and weigh-in procedures, decreasing tournament mortality rates. Tournament induced stress and mortality is widely understood at an individual level for captured bass (i.e. low dissolved oxygen levels or high water temperature in live-wells has negative effects on the health of retained bass). However, population-level impacts are not well understood. If tournament anglers are retaining large portions of black bass populations, they may have important effects on populations, but this question has received little attention. Further, new black bass tournament regulations were implemented in Iowa at the start of the 2018 open water fishing season, increasing tournament creel limits from three to five bass and from lake-specific length limits to no minimum length limit for tournament anglers. Therefore, the objective of my project is to evaluate how this regulation change may impact bass populations.

Throughout the 2015-2018 open water season, all bass tournaments at Brushy Creek Lake were attended, the entire accessible shoreline was electroshocked once per month, and radio telemetry tagged bass were tracked once per week. All bass collected at tournament weigh-ins and electrofishing were examined for a jaw tag or clipped fins, indicating tag loss. Tag numbers of recaptured bass were recorded along with fish weight and length. Untagged bass were tagged and received a year specific fin clip to enumerate tag loss. Additionally, capture location and number of bass in each live-well was recorded for all tournament retained bass.

The 40 tournaments at Brushy Creek Lake in 2018 consisted of 14 angler groups, 13 adopted new regulations whereas one (Brushy Creek Club) did not. Tournaments in 2018 retained a total 1,808 bass, with 54 bass (2.99%) dying prior to release (initial mortality). There were 423 tournament anglers in groups who adopted new regulations spending a total of 83.13 hours angling per acre whereas 606 anglers in the Brushy Creek Club that did not adopt the new regulations spent a total of 79.69 hours per acre fishing. The Brushy Creek Club conducted 58% of the tournaments at Brushy Creek Lake and had 15 initial mortalities while groups that adopted new regulations collectively had 39 initial mortalities. Number of bass captured per month was highest in May and June for tournament anglers. Tournaments that adopted new regulations captured more bass per angler per tournament during May and June than the group that did not adopt the new regulations, whereas number of bass captured was similar between the two groups during other months (Figure 1). For bass tagged in 2018, 86.74% were only retained at tournaments one time, with fewer individuals captured two (11.69%) or three (1.27%) times. However, three bass were captured four times and one bass was captured at tournaments five times during 2018.

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Bass Tournament continued….

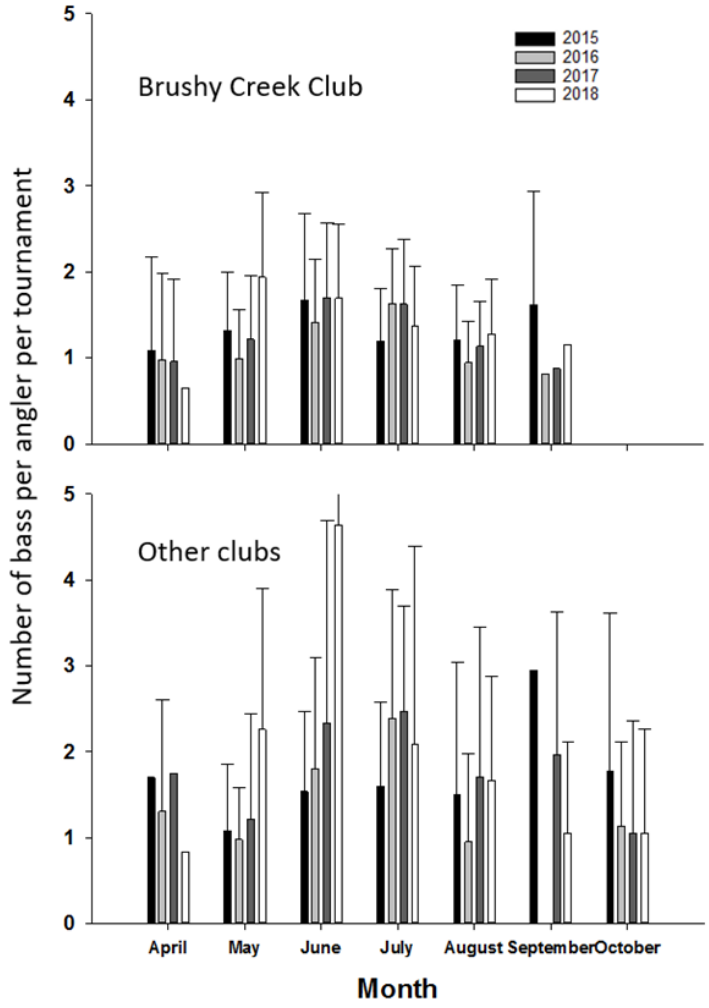


Figure 1. Number of Largemouth Bass per angler per month per tournament (± 1 SE) for the Brushy Creek Club (top panel) and all other clubs (bottom panel) during the 2018 open water season on Brushy Creek Lake, Iowa. Brushy Creek Club represents no tournament regulation change while the other clubs group represents all tournament groups who adopted new regulations in 2018.

Tournament anglers also captured 15 of 58 radio telemetry tagged bass, indicating 26% of the population was captured and weighed in during 2018, similar to 2015-2017. However, tournaments captured 229 bass <380-mm (15”) in 2018 compared to less than 137 bass captured by anglers in this size-class from 2015 to 2017 tournaments.

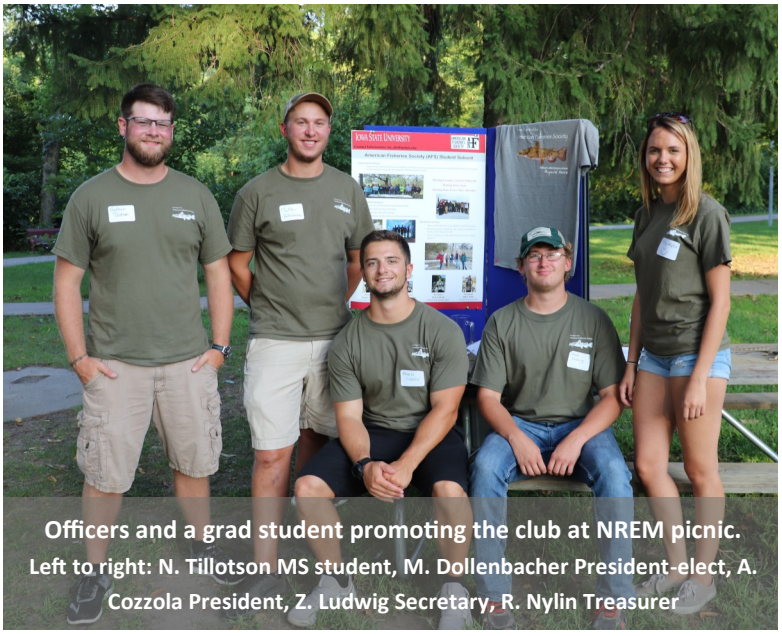
Current results are preliminary, but suggest that the regulation change may have resulted in a few additional bass weighed in at tournaments and slightly higher initial mortality rates. However, tournaments adopting the new regulations appear to have only captured more bass in the spring when catch rates were higher, and the proportion of the bass population captured by tournament anglers did not increase from previous years. Additional data will be collected during 2019 to further evaluate these potential patterns and help separate regulation effect from temporal variability

Student Sub-Unit Updates

Angelo Cozzola, President

(Like us on Facebook, search @ISUAFS)

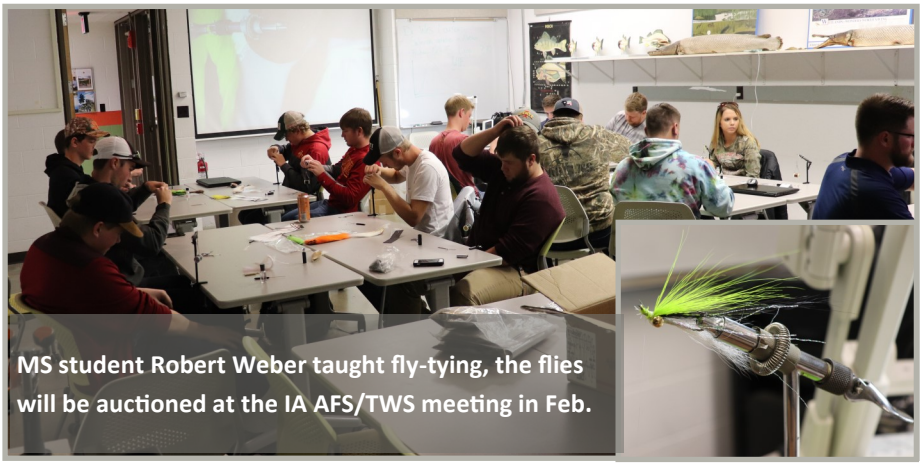
Over the past year our student sub-unit has been very involved in the professional development of students interested in the fisheries field at Iowa State University. Our club regularly facilitates activities with Dr. Weber`s fisheries ecology and management lab to enable our members to gain field experience. We also facilitate professional development by providing networking opportunities with fisheries professionals such as DNR employees. In the past year we have:



Officers and a grad student promoting the club at NREM picnic. Left to right: N. Tillotson MS student, M. Dollenbacher President-elect, A. Cozzola President, Z. Ludwig Secretary, R. Nylin Treasurer

Student Sub-Unit Updates continued….

- Assisted the Iowa DNR at Rathbun Hatchery to fin clip and PIT tag Walleye and hybrid striped bass.
- Held a resume workshop with Iowa DNR professionals to provide our members with important information and skills on how to compete for seasonal and permanent positions.
- At a majority of our bi-weekly meetings we host a professional speaker in the fisheries field. In the past year presenters have included a USDA fish biologist, DNR hatchery technician, graduate students, and Iowa State faculty that have a fisheries background among others.
- We host the airing of AFS sponsored webinars for members as well as fisheries related faculty, to keep up-to-date on what is important within the parent society.
- Hosted a trip to the Omaha, NE zoo where we did a backstage tour of the aquariums and interacted with zoologists and marine biologists.



MS student Robert Weber taught fly-tying, the flies will be auctioned at the IA AFS/TWS meeting in Feb.

- Hosted a social event at the North Central Division Technical conference at Iowa`s Lakeside Lab. We prepared food and sold AFS mugs and t-shirts to raise funds for our club.
- We have also had multiple club events that promote fisheries education. Over the summer, we helped to facilitate a fisheries field day for an elementary school that included electrofishing, fish processing, seining, and radio-telemetry workshops.

Assisting with the Trout stocking event at Ada Hayden

- We have given back to the community through multiple volunteer events. We have recently signed an adoption agreement with Story County Conservation to maintain all of the fishing line waste tubes in public fishing waters around the county, which we installed the previous year. We volunteer at the bi-annual trout stockings of Ada Hayden every year as well.

Maintaining fishing line tubes in cooperation with Story County

We are excited for the growth of our subunit and facilitating more professional development activities for our members.

Fish Habitat in Iowa Streams *continued from page 5*

erosion and alluvial deposition have occurred in the other, more hilly ecoregions than has transpired in the mostly flat Des Moines lobe. Thus, areas where research has documented significant issues may be the least impacted areas of Iowa.

Other types of research conducted at broader scales show high quality fish habitat is a limited resource in Iowa. A 2015 nationwide assessment of fish habitat indicated that 69% of stream miles in Iowa were categorized as having a high or very high risk of habitat degradation (Crawford et al., 2016). This remotely-sensed assessment is corroborated by recent field observations made in Iowa's rivers and streams. Research studies indicate that river and stream substrates are of poor quality (67% fine materials v. 33% coarse materials), 40% of streambanks are comprised of bare soil, 88% of the fish assemblage (by weight) is comprised of nongame fish, and stream channels (width-depth ratio =78) are disturbed, overly-wide, and subject to accelerated bank erosion (Gelwicks 2013, Rosgen and Silvey 1996, Vermont ANR 2009).

Data show that fish habitat and fish community metrics are not improving, while some water quality parameters may be (Schilling 2016). The "why" of this conundrum brings us to the concept of the stream ecosystem function (Figure 1, Harman et al. 2012). Holistic restoration of streams and rivers can only be accomplished when all aspects of the system are included – hydrologic, hydraulic, geomorphological, physiochemical and biological – not just water quality

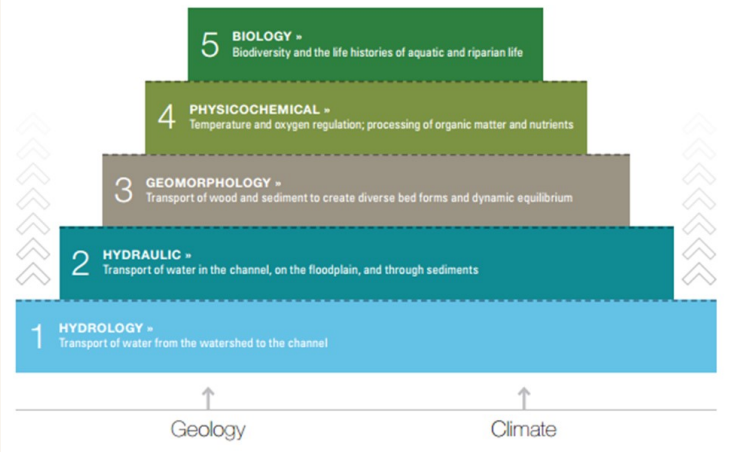


Figure 1. Hierarchy of impact on stream ecosystems.

(physiochemical). River restoration professionals routinely examine a stream channel's width to depth ratio to assess stability of channels and watersheds. Stable, high quality streams generally are deeper and narrow (like the ones originally reported in Iowa), with width to depth ratios less than 20 (Rosgen 1996); recall that on average, Iowa's are 78. Channels with high numbers tend to have increased hydraulic stress against streambanks, accelerating bank erosion. As banks erode, channels become wider, shallower and less able to transport sediment; instream deposition occurs, further accelerating bank erosion, and the cycle continues (Vermont ANR 2009). Recent research at Walnut Creek in the Neil Smith National Wildlife Refuge, a watershed with ecosystem restoration in progress, shows extensive streambank erosion during extreme flow events, and residual sediment export following instream deposition after the large flow events (Palmer et al., 2014). While substantial upland restoration has occurred in the watershed, the most upstream portions are still in row crop agriculture, thus agricultural drainage continues to affect stream hydrology. Also, no specific streambank stabilization efforts occurred, thus historic streamside alluvial deposits were readily available for "removal." Since these alluvial sediments are also rich storehouses of phosphorus, the detrimental impacts of continued bank erosion are two-fold: fish habitat remains degraded from sedimentation, and phosphorus flux from watersheds continues to be problematic.

There are some interesting examples in Iowa of how streams could respond to "restoration". On-stream impoundments of Iowa rivers, especially those with longer hydraulic residence times, allow sediment and phosphorus to deposit in the pool above the dam, support limited denitrification in the pooled water, and generally temper the extreme flow rates of large events. For many years, Lake Delhi on the Maquoketa River in northeast Iowa acted in this manner. The stretch of river below the dam supported a quality Smallmouth Bass fishery. Stream substrate sampling from 1998 revealed 85% coarse materials versus 15% silt and sand (fine materials), the average depth was 0.75 meters, and the width-depth ratio was 49. Following the flood-related dam failure in 2010, until replacement in 2016, the Smallmouth Bass population was reduced by 74% (by number) and 81% (by weight), substrates were 82% fine materials, average depth decreased to 0.39 meters, and width-depth ratio increased to 122. Sampling in 2016 revealed improvements in the Smallmouth Bass population, but it remained below pre-dam failure levels. Substrates have started to be cleansed, 60% of substrate is once again coarse materials; average depth has increased to 0.48 meters, and the width-depth ratio is 78 (Gelwicks 2012, Gelwicks 2015, Gelwicks 2017). This information is not meant to advocate for more impoundments on rivers, as they are not a long term solution; however, it does indicate how systems can respond when sediment flux is radically reduced.

Improving fish habitat in streams and rivers is a worthy conservation goal for Iowa, and it coincides with the need to significantly reduce phosphorus flux as outlined in Iowa's Nutrient Reduction Strategy.

Fish Habitat in Iowa Streams *continued from page 12*

Streambank erosion is a substantial source of sediment, may be contributing 40-80% of phosphorus to Iowa's waterways (Iowa Nutrient Reduction Strategy, 2016), and streambank stabilization/ riparian buffer strips have been shown to reduce these loses in comparison to row cropped riparian areas (Zaimes et al., 2008). Utilizing streambank stabilization practices from the Iowa Nutrient Reduction Strategy, especially if applied in a concerted manner from upstream to downstream locations, would dramatically enhance fish habitat and fish populations in Iowa's rivers and streams.

BIBLIOGRAPHY

Crawford, S., Whelan, G., Infante, D.M., Blackhart, K., Daniel, W.M., Fuller, P.L., Birdsong, T., Wieferich, D.J., McClees-Funinan, R., Stedman, S.M., Herreman, K., and Ruhl, P. 2016. Through a Fish's Eye: The Status of Fish Habitats in the United States 2015. National Fish Habitat Partnership. accessed on November 16, 2017, at http://assessment.fishhabitat.org/.

Gelwicks, G. T. 2012. Response of fish and habitat to stream rehabilitation practices in Iowa's interior rivers and streams. Iowa Department of Natural Resources. Federal Aid in Sport Fish Restoration, Annual Report, Des Moines.

Gelwicks, G. T. 2013. Evaluation of the importance of specific in-stream habitats to fish populations and the potential for protecting or enhancing Iowa's interior river resources. Iowa Department of Natural Resources. Federal Aid in Sport Fish Restoration, Completion Report, Des Moines.

Gelwicks, G. T. 2015. Response of fish and habitat to stream rehabilitation practices in Iowa's interior rivers and streams. Iowa Department of Natural Resources. Federal Aid in Sport Fish Restoration, Annual Report, Des Moines.

Gelwicks, G. T. 2017. Response of fish and habitat to stream rehabilitation practices in Iowa's interior rivers and streams. Iowa Department of Natural Resources. Federal Aid in Sport Fish Restoration, Annual Report, Des Moines.

Harman, W., R. Starr, M. Carter, K. Tweedy, M. Clemmons, K. Suggs, C. Miller. 2012. A Function-Based Framework for Stream Assessment and Restoration Projects. US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Washington, DC EPA 843-K-12-006.

Heathcote, A.J., Filstrup, C.T., & Downing, J.A. 2013. Watershed Sediment Losses to Lakes Accelerating Despite Agricultural Soil Conservation Efforts. PLoS ONE, 8(1), E53554.

Jones, C.S. and Schilling, K.E., 2011. From agricultural intensification to conservation: sediment transport in the Raccoon River, Iowa, 1916–2009. J. Environ. Qual. 40, 1911–1923.

Iowa Nutrient Reduction Strategy. 2016. http://www.nutrientstrategy.iastate.edu/documents

Kegley, C. 1936. Personal memoirs. Los Angeles, Calif: Max W. Kegley.

Lea, A.M. 1836. Notes on Wisconsin, with particular reference to the Iowa district or Black Hawk purchase…. H.S. Tanner, Philadelphia, PA 53 pp.

Meek, S. E. 1892. Report upon the fishes of Iowa, based upon observations and collections mad during 1889, 1890, 1891. Bur. U.S. Fish. Comm., 10:217–248.

Menzel, B. W. 1981. Iowa's waters and fishes: a century and a half of change. Proc. of the Iowa Acad. Sci.,88:17–23.

Palmer, J. A., Schilling, K. E., Isenhart, T. M., Schultz, R. C., & Tomer, M. D. 2014. Streambank erosion rates and loads within a single watershed: Bridging the gap between temporal and spatial scales. Geomorphology, 209, 66.

Quick, H. 1925. One man's life. Bobbs-Merrill Co., Indianapolis, IN. 408 pp.

Rosgen, D.L. 1996. Applied River Morphology. Wildland Hydrology Books, Pagosa Springs, CO. 350 pp.

Schilling, K. 2016. Is Iowa's Water Quality Getting Better or Worse? P. 4-5. In Clay, R.. and Runyan, C. (eds.) Getting Into Soil and Water 2016. Iowa Water Center. Ames, IA.

Schilling, K., & Drobney, P. 2014. Restoration of Prairie Hydrology at the Watershed Scale: Two Decades of Progress at Neal Smith National Wildlife Refuge, Iowa. Land, 3(1), 206-238.

Sutherland, A. B., J. L. Meyer, and E. P. Gardiner, 2002. Effects of Land Cover on Sediment Regime and Fish Assemblage Structure in Four Southern Appalachian Streams. Freshwater Biology 47 (9):1791-1805.

Tomer, M.D. 2012. A legacy of past soil erosion. P, 26-27. In: McDonough, D., ed. Getting into Soil and Water 2012. Iowa Water Center. Ames, IA.

Vermont Agency for Natural Resources. 2009. Vermont Stream Geomorphic Assessment Phase 2 Handbook. Montpelier, VT. 110 pp.

Yan, B., M.D. Tomer, and D.E. James. 2010. Historical channel movement and sediment accretion along the South Fork of the Iowa River. Journal of Soil & Water Conservation. 65:1-8.

Zaimes, G., R. Schultz, and T. Isenhart. 2008. Streambank soil and phosphorus losses under different riparian land-uses in Iowa. Journal of the American Water Resources Association 44:935-947.

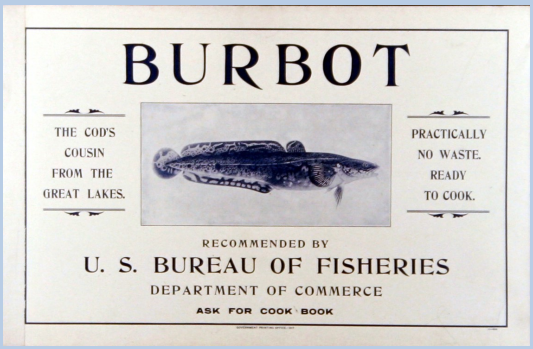
Upcoming Professional Meetings

- **79th Midwest Fish and Wildlife Conference**. Cleveland, Ohio, January 27-30, 2019 www.midwestfw.org Early registration ends Dec. 21!
- **Mid-Continent Warmwater & Coolwater Fish Culture Workshops**. Council Bluffs, IA February 4-6, 2019. Abstract submission deadline Jan 4, 2019. Randal.Esser@dnr.iowa.gov
- **Iowa AFS & TWS Joint Meeting.** Honey Creek Resort, Moravia IA February 12-13, 2019. Abstract submission deadline Dec 21! Scott.Grummer@dnr.iowa.gov
- **Iowa Water Conference**. Back to basics: Land, Water People. Ames, Iowa March 12-13, 2019. Jeff.Kopaska@dnr.iowa.gov

Fishes & Dishes

Sharing the fun stuff!!

Angelo Cozzola, Fall 2018
Below the Brushy Creek Spillway



Posters like this one on the left from 1917 were created to fight the food shortages caused by World War I. Even before the United States entered the War on April 6, 1917, American relief organizations were shipping food along with other relief supplies overseas to support the war effort. This led the Department of Commerce and one of its bureaus: The Bureau of Fisheries to promote the eating of more native fish species, including some more "nontraditional" ones like carp, bowfin, and burbot, to replace the meat that was going to support the troops and the war effort. Here is one of the many fine recipes that could be found in the Burbot Cookbook:

Burbot and spaghetti – Boil about 1 pound of fish for 10 minutes in salt water, drain, cool, and flake it. Prepare 2 cupfuls of boiled spaghetti. Mix 2 tablespoons of butter, 3 tablespoons of flour, 2 cups of milk, salt, and pepper, and boil until thick. Place a layer of spaghetti in a baking dish, then a layer of fish and cover with the sauce and a few slices of hardboiled egg. Spread bread crumbs over this, moisten them with a little melted butter, and bake until brown. For more Burbot recipes, circulars and posters visit https://babel.hathitrust.org/cgi/pt?id=uc1.b3041733;view=1up;seq=1 ..... *Submitted by Vance Polton*

Crappie, 2018

Fish Coating – If you enjoy a crispy coating, but don't want the thickness of a batter, this recipe may be for you. Lay fillets on paper towels to dry. Mix 1/2 cup flour in a plastic bag with your choice of seasonings (1/4 tsp salt, 1/2 tsp lemon pepper). Beat 2 eggs in a bowl that will fit fillets one at a time. Crush Rice Krispies cereal in a zip bag (or used prepared crushed cornflakes). Put some of the fillets into the bag of flour, shake to coat. Shake excess flour from each fillet and dip in the egg. Then place fillet into the crushed cereal and coat both sides. Deep fry or pan fry cereal coated fillets until a light golden brown. Don't overcook. panfish fillets will be done after just a minute or two depending on their thickness. *Submitted by Darcy Cashatt, original from Sandy Neuswanger.*

Application form

Fisheries Project Grant

Iowa Chapter – American Fisheries Society

Project Name:_____

Project Description: _____.
_____
_____
_____

Attach map or supplementary information

Project Location:

Water Body:_____

Address:_____

_____County:_____

Start Date: _____ End Date:_____

Project Personnel:_____
_____

Fisheries Benefits:_____
_____

Iowa Chapter Representative: _____

Amount needed: $ _____.____ Total project cost: $_____.____

Money will be used for: _____
_____
_____
_____

Up to $1,000.00 per project.

Approved by Excom Committee Date:_____

Fisheries Project Grant Application Form Instructions

The Iowa Chapter of the American Fisheries Society is offering to help finance worthwhile fisheries related projects. The completed application form needs to be transferred to the Iowa Chapter President by an Iowa Chapter Member.

Project Name – Give the project name.

Project Description – Give a brief review of the intended project. Include the work to be done, the methods and material that will be used in the project.

Attach a map and any supplementary information that you think will help the Excom Committee evaluate the project.

Project Location – Where will the work be done.

Start and End dates for the project. Month and calendar year will do.

Project Personnel – Include organizations and or individuals who will be directly involved in the work.

Fisheries Benefits – A very important part of the project should be direct benefits to Iowa's fishery. How does the project help and who is the beneficiary?

Iowa Chapter Representative – All projects need to have and Iowa Chapter member as a sponsor.

Amount needed – Tell us how much you need and the total project cost. There is a $1,000.00 limit for each project.

Money will be used for – Be as specific as you can. Will the money be used to hire people, buy, equipment, be seed money for a grant, etc.

The Excom Committee of the Iowa Chapter will review the application and approve or reject the request.