2018 Summer CTC Meeting Notes

Location: Lakeside Laboratory, Milford, IA

Date: July 26, 2018

President's Note:

- After serving as the Centrarchid Technical Committee president for over six years, Dan Dembkowski has passed his responsibilities as president to me. Dan took over as CTC president in January 2012, and served during his time in South Dakota and Wisconsin. I'd like to thank Dan for efforts the past few years. Now, if you have any thoughts, ideas, reports, or information you would like shared with the CTC, you are welcome to contact me through my info below.

BJ Schall
Fisheries Biologist
South Dakota Game, Fish and Parks
4500 S. Oxbow Ave.
Sioux Falls, SD 57106
Benjamin.Schall@state.sd.us
605-367-5243

Dakotas (North and South)

- Black bass size restrictions have been removed on most waters in South Dakota. Size restrictions remain in place on only three waterbodies: Burke Lake (Gregory County), New Wall Lake (Pennington County), and Lake Yankton (Yankton County). It is generally believed that few people are harvesting black bass making the regulations unnecessary at this time.
- Fisheries staff in Pierre, SD have begun evaluating the effects of bass removal on growth and compensatory recruitment in small ponds located in the prairie grasslands in central SD. Removal estimates range from approximately 2-16%, with much of the removal effort occurring during trap and transfer operations. This project is ongoing and will continue to be evaluated.
- SDGFP staff and Iowa State University will begin to evaluate potential predation of adult Smallmouth Bass and Walleye on age-0 naturally reproduced and stocked Sander spp. in Lake Oahe through intensive diet analysis in two bays that are stocked with Walleye and two bays that are not stocked. This project will begin in summer 2019. SDGFP staff working in the Fort Pierre office also recently submitted a manuscript tracking populations of Smallmouth Bass in the Missouri River reservoirs. The overall conclusion is that Smallmouth Bass are doing well in these systems.
- Direct and Indirect Impacts of Recent Gizzard Shad Introductions in Eastern and Western South Dakota Impoundments

  Submitted by Brandon Vanderbush

Field work was completed on a study to document the relative contribution of age-0 gizzard shad to black bullheads, black and white crappie, largemouth bass, northern pike, smallmouth bass, and walleye diets, growth, and condition in two West River lakes (Lakes Bear Butte and Curlew) in 2017 and two East River small impoundments (Lakes Alvin and Marindahl) in 2018. SDSU students and South Dakota Game, Fish and Parks fisheries staff used multiple sampling techniques to collect fish. Fish were primarily collected by nighttime boat electrofishing (20-min shoreline transects) and short-term gill nets (15-min sets). Modified fyke nets were used to supplement catch of small fish when needed. Captured fish were then subjected to gastric lavage (adults) or sacrificed (juveniles) in order to collect consumed food items. Food habits sampling occurred in the last two weeks of every month, from May to September.

A total of 1,665 and 1,060 fish were collected on West River and East River lakes, respectively. Food habits patterns differed between East River and West River lakes with fish in West River lakes relying more heavily on Gizzard Shad as food. For East River lakes in May, predators mainly consumed invertebrates and some cladocerans while West River fish consumed mostly cladocerans. In June East River, both Black and White Crappie switched to cladocerans, but then back to invertebrates later in the summer. In June West River, diets shifted to mainly invertebrates and there were some larval gizzard shad present in diets of small black crappie, mainly in Curlew Lake.

In July and August East River, crappies mainly consumed invertebrates; a few individuals consumed a Gizzard Shad in August. Other juvenile predator species had similar diets to both crappie species in May and June. Food habits then shifted to small fish specimens or crayfish in the later months. Only a small number of the other predators consumed Gizzard Shad.

In July West River, more crappie diets consisted of young of the year gizzard shad and cladocera were only found in small amounts in a few diets. In August, both small and large predator fish diets consisted entirely of Gizzard Shad. Large fish fed on adult Gizzard Shad all summer long.

Iowa

- Iowa State University PhD candidate Andrea Sylvia is currently evaluating the impacts of fishing tournaments on Largemouth Bass mortality.
- Evaluations of stocking treatments following lake renovations (draining and rotenone application) have demonstrated that adding adults at high density to jumpstart populations have produced more successful recruitment than using fry or fingerling stockings.
- Current work is being conducted on the Missouri River to improve crappie habitat. Telemetry will also be conducted to evaluated crappie movements and impacts from these projects.

Illinois

- No report at this time

Indiana

- No report at this time

Kansas

Bluegill and Redear Sunfish Sampling – Comparing Fyke Nets to Electrofishing

Fyke nets are commonly used to sample Bluegill *Lepomis macrochirus* and Redear Sunfish *L. microlophus* in lotic systems. However, relative abundance estimates from fyke net samples are frequently imprecise and limit inference that can be drawn about the sampled population. We compared relative abundance estimates and associated precision from samples collected with autumn fyke nets and autumn electrofishing at 12 small Kansas impoundments to better understand equipment limitations and refine sampling protocols. Catch-per-effort (CPE) of Bluegill varied from 4.0/net-night (nn) to 67.3/nn (mean=29.3/nn) in fyke nets and 100.0/hr to 691.5/hr (mean=339.4/hr) with electrofishing. Similarly, CPE of Redear Sunfish varied from 1.0/nn to 19.8/nn (mean=11.4/nn) in fyke nets and 7.5/hr to 82.5/hr (mean=49.2/hr) with electrofishing. Relative standard error (RSE) of Bluegill CPE varied from 14% to 97% (mean=46%) in fyke nets and 8% to 27% (mean=17%) with electrofishing. Relative standard error of Redear Sunfish CPE varied from 20% to 73% (mean=54%) with fyke nets and 18% to 40% (mean=30%) with electrofishing. These results indicate that autumn electrofishing might be preferable to autumn fyke nets for sampling Bluegill and Redear Sunfish when precise relative abundance estimates are desired.

Bluegill Population Dynamics

KDWPT fisheries staff electrofished bluegill and redear sunfish populations in thirty four impoundments statewide in the fall of 2017. The objectives of the study were to evaluate the current state of bluegill and redear sunfish growth, identify explanatory variables to isolate characteristics that are encouraging and discouraging age structure and growth, and collect pre-data for use of potential bluegill management. 7,054 bluegill were sampled and 1,685 were aged; 16 fish (0.2%) were over 8 inches and 293 (4.2%) bluegill were over 6.8 inches, a specified length derived from anglers via a bluegill management survey. Annual mortality estimates averaged 64.1% and ranged from 25-88%. Growth rates were relatively fast as it takes 2.9 to 8 years, average of 5 years, to reach 6.8 inches, but mortality rates are limiting growth potential to preferred sizes. An unexploited population was included in the study that had approximately 20% less annual mortality and about five times the number of fish reaching 6.8 inches in population models compared to an average Kansas lake that we had sampled. Limnological, biological, and physical characteristics of the impoundments were ran through a PCA to identify explanatory variables that drives, or discourages, bluegill growth.

Smallmouth Length Limits

I increased the minimum length limit on smallmouth bass to 21 inches this year at Glen Elder. Not sure this has been done before, but my goal is to create a trophy smallmouth bass fishery. The population exhibits good growth rates, but there are few fish collected greater than 20 inches. I believe there is just enough angler harvest occurring to limit many of the fish's

growth potential. This will allow those 18 inch fish several more years to grow and hopefully achieve their maximum growth potential.

Sunfish Slot Limits

I proposed a new slot length limit for all sunfish species at Jewell State Fishing Lake beginning next year, if approved. The goal is to create a trophy sunfish fishery, something that is lacking on the state at this time. The 6-9 inch slot length limit will allow anglers to harvest as many of the smaller fish as they would like (mostly for bait, I'm sure), while protecting these larger fish. Once fish reach 9 inches they are available for harvest, but there is a limit of 5 per day over 9 inches.

Saugeye Effects on Age-and Growth of White Crappie

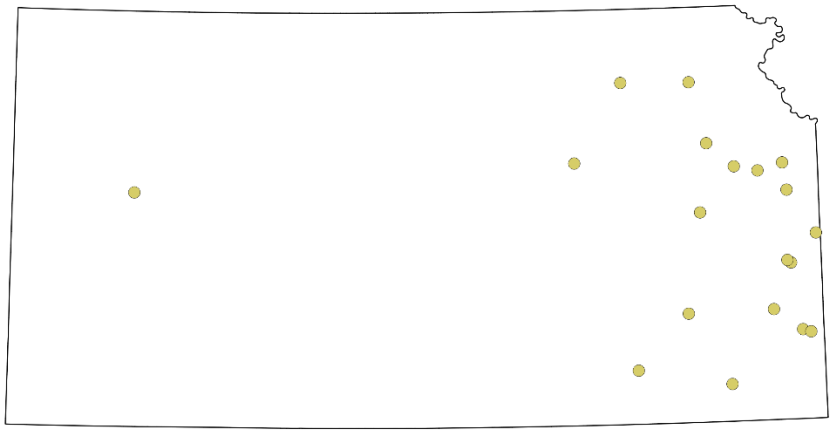
I have had an ongoing project at Scott SFL consisting of stocking saugeyes to restructure white crappie population dynamics. This evaluation includes relatively long term crappie age-and-growth analysis that shows increased growth and reduced abundance.

Evaluation of early-spawn largemouth bass stockings in Kansas reservoirs

We stocked early-spawned largemouth bass into Hillsdale and Clinton Reservoirs beginning in 2012 to increase recruitment and ultimately improve the recreational largemouth bass fisheries. Catch rates of largemouth bass increased at both reservoirs from 2013 until 2015; however, CPUE has decreased since in both reservoirs through 2017. Annual hatchery fish contribution to spring electrofishing samples has varied from 2.1% to 30.8% at Clinton Reservoir and from 8.9% to 50.9% at Hillsdale Reservoir. Hatchery-reared fish were generally larger than wild fish at age-1 although size-related trends thereafter are difficult to discern. Approximately equal numbers of 35 mm (phase 1) and 65 mm (phase 2) fish were stocked at Hillsdale Reservoir, although contributions to the population from these stockings have been variable. Tournament catches were evaluated for presence of hatchery-reared fish at Hillsdale, and in 2017, 27.5% of legal fish (i.e., 15” or greater) at monitored tournaments were of hatchery origin, representing three year classes.

Prevalence of Largemouth Bass Virus in Kansas impoundments

Largemouth Bass Virus (LMBV) was first discovered in a Southeast Kansas impoundment in 2007, and six additional Kansas impoundments tested positive for LMBV between 2008 and 2017. Tests for LMBV during this time were mainly driven by unexplained population declines or notable fish kills. In 2017, a targeted sampling effort revealed four additional positive impoundments out of ten tests. In 2018, eight more impoundments tested positive for LMBV. Currently, 19 impoundments have positive tests for LMBV. Each reservoir that has had a positive test and has been retested in subsequent years has remained positive. We are in the process of examining effects of LMBV on population parameters of Kansas Largemouth Bass populations.



Map of Largemouth Bass virus positive populations in Kansas.

Minnesota

- Panfish regulations are being evaluated across the state. Some centrarchid populations have demonstrated slow growth and old age structure, so future regulations may include some one-over size restrictions.

Missouri

- Missouri continues to standardize electrofishing output. Past work included determining the fish conductivity of Smallmouth Bass to improve, maximize, and standardized sampling for this species. Estimates of conductivity were approximately 123 microsiemens/cm. Current work is being done to test catchability of Smallmouth Bass by fish size and waveform in a field setting below, at, and above the AFS recommended power goal based on water conductivity levels.

- A summary of three projects related to centrarchid research and management in Missouri are noted below.
- **Project Name:** Mark Twain Lake Crappie Exploitation
  Contact:
  Ross Dames or Annie Hentschke
  Missouri Department of Conservation
  8965 Hwy 36 Suite 1
  Hannibal, MO 63401
  (573) 248-2530

Summary: Mark Twain Lake (MTL) anglers continue to suggest implementation of a minimum length limit to improve crappie size. While a minimum length limit is a valid suggestion, some researchers in Missouri and other states report that minimum length limits are often unsuccessful, especially in impoundments where crappie growth is slow and natural mortality is high. Regional biologists have many years of MTL crappie age, growth, and total

mortality data. However, exploitation is unknown and is needed to more confidently manage this fishery. Regional fisheries staff will implement a reward tagging study during 2019 and 2020 to assess exploitation.

Due to low tag retention of T-bar anchor tags and scant research of tagging crappie with Carlin-dangler tags, biologists completed a tag retention study at Hunnewell Lake Hatchery. The controlled environment of the hatchery, with the ease of resampling, made it a favorable location for this initial study. White Crappie and Black Crappie at least 8 inches long were captured by trapnetting in spring 2018 from Hunnewell Lake. Crappie were either tagged under the dorsal (UD) with a right pectoral fin clip, tagged behind the dorsal (BD) with a left pectoral fin clip, or remained unmarked as a control. Pectoral fins were clipped to assess tag loss at the end of the study. Sampled crappie were transferred to an experimental hatchery pond and monitored closely for seven days to calculate initial handling mortality. Within the seven-day period, handling mortality was less than 2 percent. The pond was drained after 6 months to assess tag retention. Tag retention during this period was 98 percent for UD and 18 percent for BD. Consequently, MTL crappie will be tagged with Carlin-dangler tags, attached with stainless steel wire, under the spiny dorsal fin, and eventual exploitation estimates will be adjusted for tag loss.

- **Project Name:** Responses of Fish Communities to Predator Introductions in Small Missouri Impoundments

Contact:
Paul Michaletz
Missouri Department of Conservation
3500 E Gans Road
Columbia, MO 65201
paul.michaletz@mdc.mo.gov
573-815-7901, x2921

Objective: To determine if stockings of hybrid striped bass and flathead catfish can improve growth rates and size structure of bluegill and crappie populations in small impoundments containing common carp and gizzard shad.

Status: Hybrid striped bass and flathead catfish were stocked in four small impoundments to reduce gizzard shad and common carp abundance. Hybrid striped bass were also stocked in another five impoundments. Small fingerling (50 mm total length, TL) (2") hybrid striped bass have been stocked annually at 250 fish/ha (600/acre) since 2014 and flathead catfish (200-380 mm TL) (8-15") were stocked at 40 fish/ha (100/acre) in 2014 and 2015. The nine treatment lakes were each paired with a reference lake where no predator stockings have occurred. The goal of these predator stockings is to improve growth and size structure of panfish populations. So far, there have been some slight improvements in bluegill growth in most of the treatment lakes. The study continues for one more year.

Abbreviated Abstract: Small impoundments provide close-to-home fishing opportunities for many Missourians, but many do not produce quality sport fisheries for one or more species. In particular, many small impoundments contain populations of slow-growing bluegills and crappies that exhibit poor size structure. Although there may be several reasons for these poor quality panfish populations, the presence of gizzard shad and common carp are known to negatively influence these populations. We proposed to introduce hybrid striped bass and flathead catfish into some lakes to determine if predation by these species can

reduce the abundances of gizzard shad and common carp. Our experimental design consists of two treatments-impoundments stocked with hybrid striped bass and impoundments stocked with both hybrid striped bass and flathead catfish. We also have reference impoundments with no predator stockings to serve as controls. Both hybrid striped bass and flathead catfish are known to prey on gizzard shad and flathead catfish also prey on common carp. Both predator species may also consume panfish which may also be beneficial because impoundments with poor panfish populations typically contain an overabundance of these fishes. If abundances of these two deleterious species and panfish are reduced, panfish populations may respond with improved growth and size structure. Predator stockings may be a cost-effective strategy to improve panfish populations and create diverse angling opportunities. Other potential strategies such as mechanical or chemical removal of gizzard shad and common carp may provide short-term improvements in the panfish populations, but these methods are costly and do not provide a long-term solution because gizzard shad and common carp typically quickly rebound to pre-treatment levels.

- **Project Name:** Stockton Lake Spotted Bass Length Limit Evaluation

Contact:
Ben Parnell
Missouri Department of Conservation
2630 N Mayfair Ave
Springfield, MO 65803
(417) 895-6881 ext. 1624
Ben.parnell@mdc.mo.gov

Summary: During 2015-2016 we conducted an angler creel survey on Stockton Lake. One of the primary goals of this survey was to gather angler input on a possible Spotted Bass regulation change. In addition to catch and harvest information, anglers were asked for their opinion on liberalizing the Spotted Bass minimum length regulation. A total of 4,021 anglers participated by answering the additional questions for the survey. Overall the anglers profoundly supported the idea of lowering the Spotted Bass minimum length limit to 12 inches, with 70.43% in favor of the regulation change (Figure 35). A total of 8.43% opposed the regulation change and 21.14% had no opinion. When asked how likely they were to keep Spotted Bass if the (mml) was reduced, 39.72 % of anglers chose "very likely", 20.73% chose "somewhat likely" and 39.55% chose "not likely". When looking only at anglers who preferred fishing for black bass, 73.54% preferred the regulation change, 10.35% opposed and 16.11% had no opinion. When asked how likely they were to keep Spotted Bass if the minimum length limit was reduced, 48.51 % of anglers chose "very likely", 22.54% chose "somewhat likely" and 28.95% chose "not likely" (Figures 36-37).

The results from the optional questions during this creel survey clearly demonstrate support from anglers in implementing a 12-inch mll for Spotted Bass on Stockton Lake. Angler catch data collected during the survey along with historical trend data from sampling, further supports the concept that Spotted Bass are rarely reaching the 15-inch mll before they succumb to senescence (Figures 38-41). With the current 15-inch mmll in place, only 11% of Spotted Bass caught during the survey were of harvestable size. Had the proposed Spotted Bass regulation change been in place during the survey, 79% of Spotted Bass caught would have been of harvestable size. Age and growth data collected on Spotted Bass scales from

1991-2000 showed age seven Spotted Bass averaged 14.9 inches. Boman (2014) found through age and growth analysis of otoliths that at age four Spotted Bass averaged 12.7 inches and age seven Spotted Bass on Stockton Lake averaged 14 inches. Data collected on the northern subspecies of Spotted Bass have shown individuals rarely live longer than age seven (Dicenzo et. Al 1995).

The above data suggests that the current 15-inch mll functions as a catch-and-release regulation. If left in place this would continue to prohibit anglers from utilizing this valuable resource to its greatest potential. Other lakes in Missouri including Lake of the Ozarks, Truman Lake, Bull Shoals Lake, and Norfork Lake have already implemented this regulation with initial success and angler support. Increased harvest of Spotted Bass could also potentially reduce interspecific competition with other species of more desirable game fish that have higher growth potential.

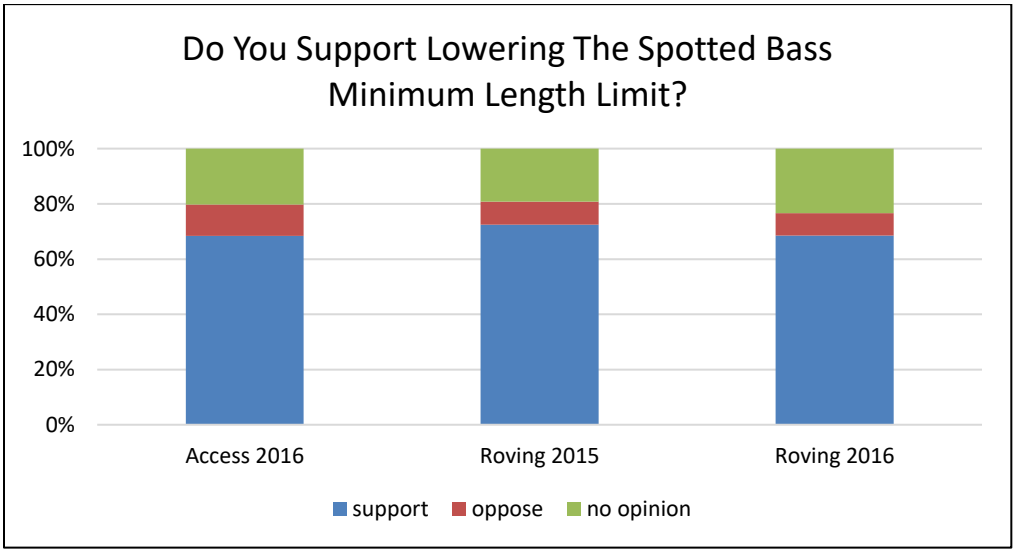


Figure 35. Angler responses to optional question # 1, shown by creel year and survey method. back to text

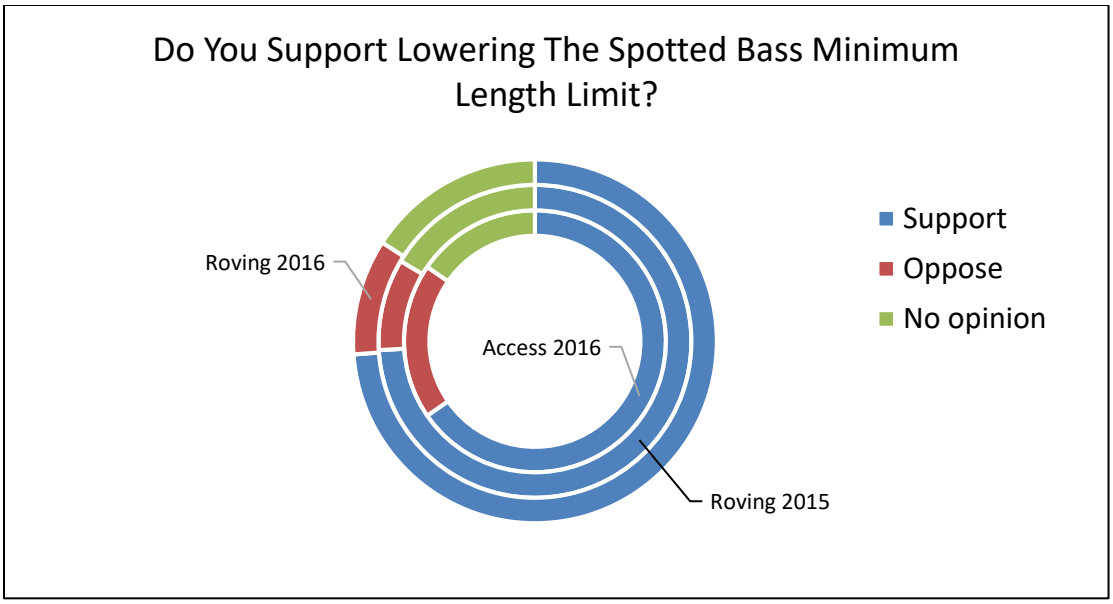


Figure 36. Anglers who preferred fishing for black bass responses to optional question # 1, shown by creel year and survey method.

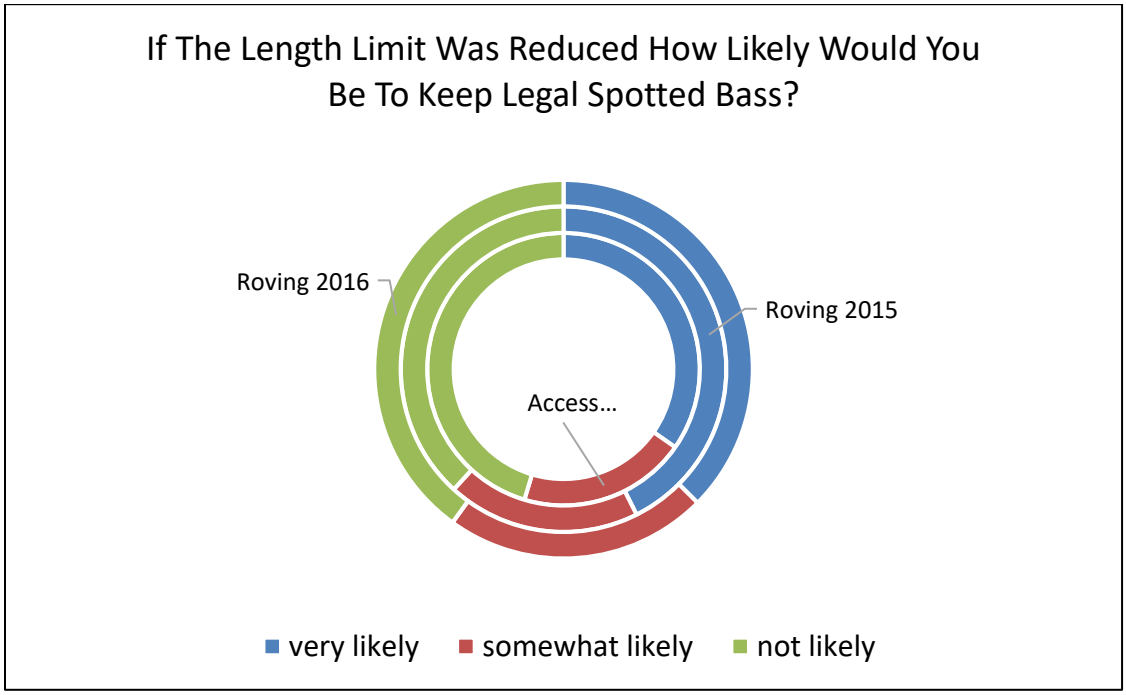


Figure 37. Anglers that would be willing to harvest legal Spotted Bass, given the reduced length limit was implemented. Shown by creel year and survey method.

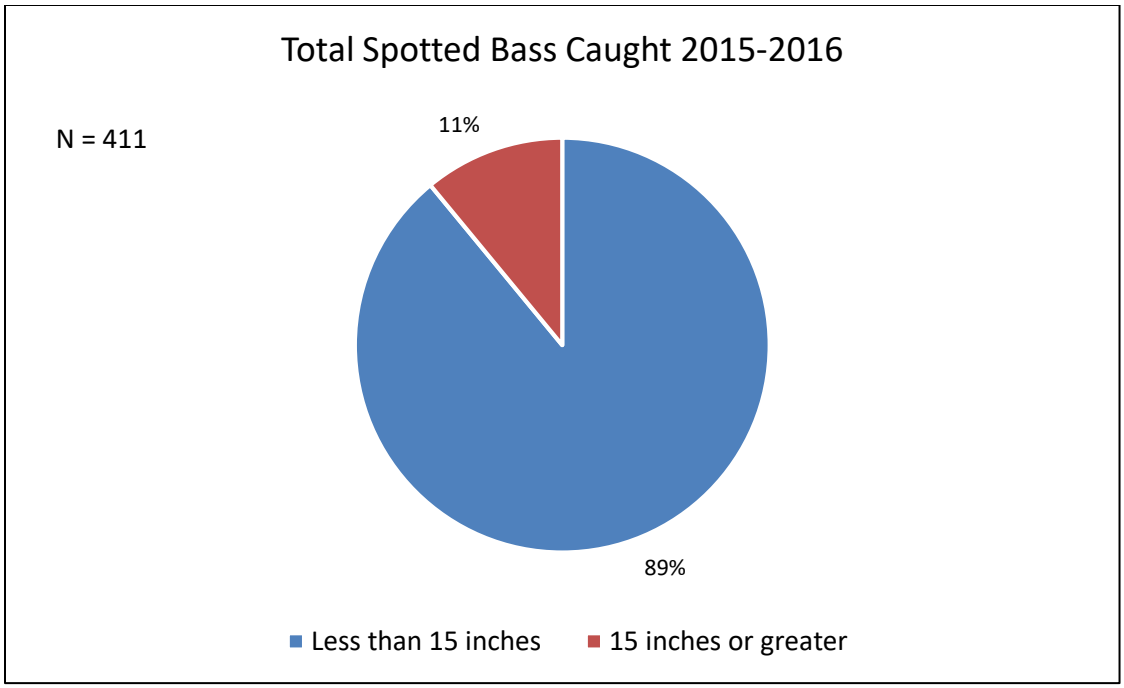


Figure 38. Total Spotted Bass caught during 2015-2016 access and roving creel surveys.

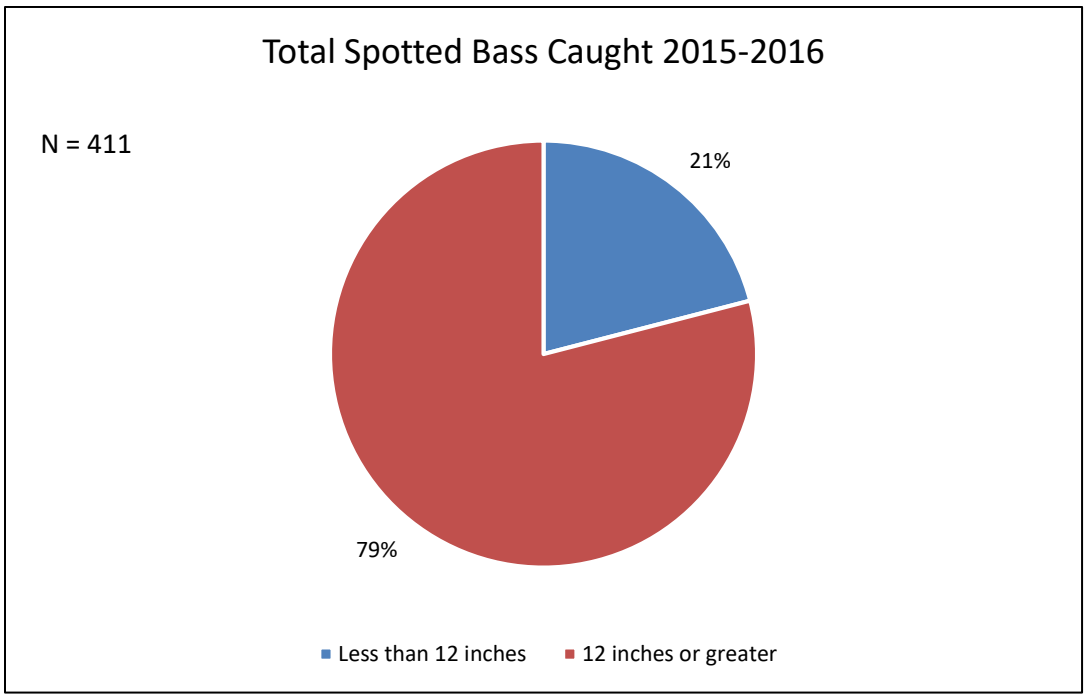


Figure 39. Total Spotted Bass caught in 2015-2016 access and roving creel surveys.

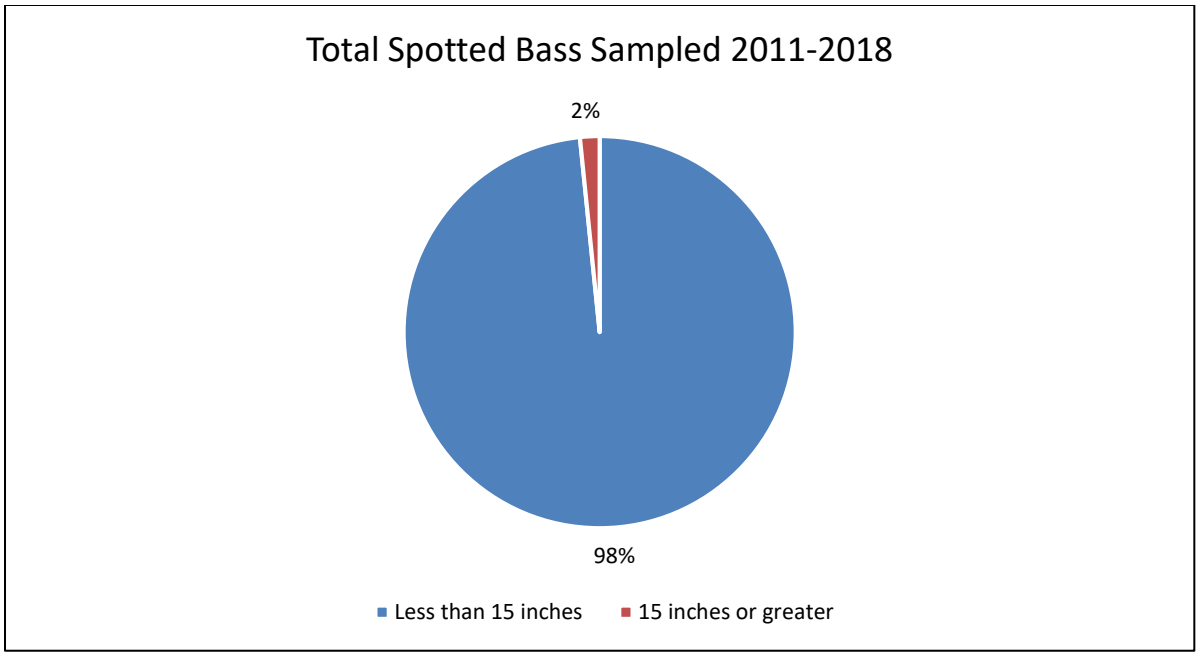


Figure 40. Total Spotted Bass sampled by electrofishing on Stockton Lake from 2011-2018.

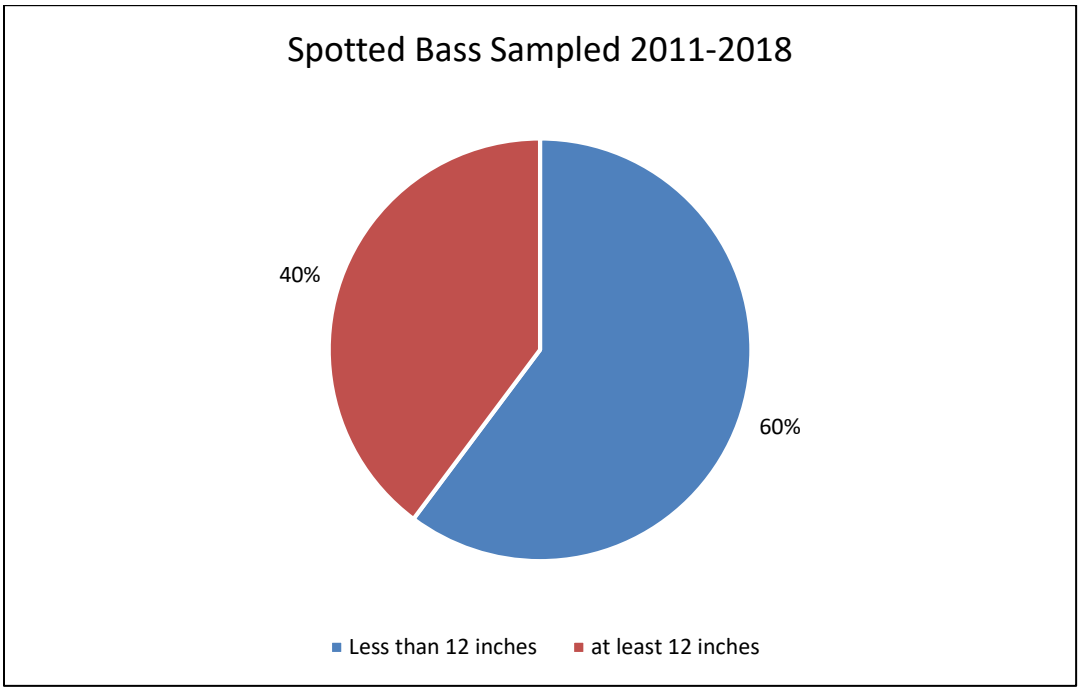


Figure 41. Total Spotted Bass sampled by electrofishing on Stockton Lake from 2011-2018.

Michigan

- Below are recent results from a long-running study (since 2005 by MDNR and CMU) of smallmouth bass populations in northern Lake Michigan. There were concerns that declining smallmouth bass populations could have been due to increasing invasive cormorants. Researchers determined that these local bass were not limited by cormorants, but rather these fish were traveling to other areas of the lake and traveling much longer distances than originally thought (they used metal jaw tags and acoustic tags in some fish). Heather Hettinger, MDNR fisheries biologist, is one of the researchers involved in this study.

Nebraska

- Nebraska has experimented with Redear Sunfish x Bluegill hybrids in an effort to possibly replace the traditional Green Sunfish x Bluegill hybrids used in local fishing ponds. It is presumed that "red-gills" would grow faster and be easier to produce in a hatchery setting, based on information from their use in Missouri. These fish are predominantly stocked in small waterbodies near urban areas for use during fishing derbies and events. "Green-gills" performed better during one test evaluation, accounting for approximately 90% of the overall catch by anglers.

Ohio

- No updates at this time.

Wisconsin

UWSP
Projects

1. *Centrarchid Removal Project*
    a. Over the last decade or more, recruitment of Walleyes has declined in many northern Wisconsin lakes. Evidence suggests that populations of Largemouth Bass have expanded and this may be true of centrarchid species in general. Consequently, potential inter-specific interactions such as competition and predation could be affecting Walleye reproductive success.
    b. During 2017-2021, we will be evaluating population- and ecosystem-level responses following the removal of centrarchid species populations from a northern Wisconsin lake and comparing these responses to trends observed in a reference lake.
    c. Specifically, we will determine if Walleye recruitment improves following removals.
    d. In addition, we will evaluate both population dynamics and demographics of Walleyes and centrarchids before and after removals occur.
    e. We have completed the collection of "baseline" information during 2017 and 2018. During 2018, we have also began removing centrarchid species populations and have currently removed >80,000 fish.

Papers

2. *Potential for reducing Largemouth Bass abundance in Wisconsin lakes using angler harvest*
    a. In response to increased LMB densities, we aimed determine what levels of fishing mortality (*F*) would be required to reduce Largemouth Bass abundance and SPR while improving size structure, we used age-structured models to predict population responses to increased fishing mortality under four different harvest regulations for eight Bass populations.
    b. Regardless of harvest regulation, changes in abundance and size structure were unlikely to occur if rates of *F* are ≤ 0.10.
    c. A no minimum total length (TL) limit had the greatest potential for reducing abundance and SPR, but relatively high levels of *F* were required. Both 356-mm maximum TL and 305-381 mm TL harvest slot limits provided the most equitable trade-offs between reducing abundance and maintaining size structure.
3. *Evaluation of dorsal spines and scales as nonlethal alternatives to otoliths for estimating Bluegill ages: sampling guidelines based on total length*
    a. Sagittal otoliths, dorsal spines, and scales from 431 Bluegill *Lepomis macrochirus* collected from 16 Wisconsin lakes were used to evaluate whether (1) they provide similar age estimates, among-reader precision, and growth and mortality estimates; 2) a simple age-correction approach can be used for dorsal spine and scale ages to provide similar growth and mortality metrics to those estimated from otoliths; and (3) observed differences in age assignments and precision among structures were related to Bluegill total length (TL) and growth rate
    b. Among three readers, among-reader precision (CV) was higher in otoliths followed by scales and dorsal spines.
    c. Scale age estimates were higher than otolith age estimates for fish with otolith ages between 1 and 4 and lower beginning at age 6; dorsal spine age estimates were lower than otolith age estimates beginning at otolith age 3.
    d. In terms of length-based guidelines, we found that both dorsal spines and scales can be used to estimate ages for Bluegill $\leq$80 mm TL, but otoliths should be used for fish $\geq$80 mm TL. In addition, a simple age correction approach can be used to calculate population parameters using non-lethal structures.
4. *A comparison of Bluegill catch rates and length distribution between cloverleaf traps and three common gears in two Wisconsin lakes*
    a. We compared cloverleaf traps, boat electrofishing, mini-fyke nets, and beach seine hauls for targeted sampling of Bluegill populations in two northern Wisconsin lakes comprised of contrasting Bluegill densities
        i. CPUE indexed based on the average amount of effort per sampling trip: number of Bluegill catch per 8 10 minute electrofishing runs (Simonson et al. 2008), the number of Bluegill per 8 mini-fyke net or 8 cloverleaf trap night sets, and of the number of Bluegill per 8 beach seine hauls
    b. Cloverleaf CPUE was highest followed by mini-fyke nets, beach seines, and electrofishing surveys. Both electrofishing and cloverleaf trap CPUE varied among months while cloverleaf trap CPUE was positively related to water temperature.

c. Overall, the length-frequency distributions of the Bluegill captured varied among gears and months as cloverleaf traps generally captured a smaller size structure relative to other gears and was the only gear to consistently capture smaller Bluegill.
d. We also conducted a power analysis to determine the amount of effort required to detect a 25% and 50% change in both CPUE and mean TL. Depending on lake, mini-fyke nets or boat electrofishing required fewer samples to detect a 25% or 50% change in mean Bluegill CPT while cloverleaf traps or beach seines required fewer samples to estimate a 10% or 25% change in mean Bluegill TL.

Max Wolter- WDNR Fish Biologist

WDNR Yellow Perch research (Zach Feiner) – Zach is looking at long term trend data to determine what factors influence Yellow Perch recruitment in Wisconsin. Initial results point to the average length of winter that a lake experiences as an important positive effect on Yellow Perch recruitment.

WDNR Panfish team – The team is looking to establish some consistent Yellow Perch recruitment trend lakes around the state that would be sampled in the fall using boat electrofishing.

UWSP – WDNR is working to get samples of Yellow Perch from lakes around the state to UWSP. These samples will be used to develop an inventory of perch life histories. Contact Dan Dembkowski for more specifics.