Catfish Management Technical Committee
American Fisheries Society - Southern Division

SDAFS – Catfish Management Technical Committee – 2023 State Reports

Alabama

Name of Representative to Technical Committee: Rob Andress

Nothing to report / No future project planned

Arkansas

Name of Representative to Technical Committee: Justin Homan

Project Name or Description: Microchemical Analysis to Assess Contributions of Stocked and Wild Channel Catfish to State-owned Lakes in Arkansas

Contact Information:

Name: Morgan Winstead

Coauthors: Dr. Greg Whitledge & Dr. Allison Asher

Email: m.winstead97@gmail.com

Phone: 252-230-4412

Objective:

1. To identify and validate differences in fin ray chemistry of hatchery and lake-resident fish and determine the accuracy in which fish can be assigned to their collection location using fin spine chemistry
2. Use spine microchemistry (Sr:Ca and Ba:Ca ratio) to identify and quantify natal origins of Channel Catfish within Arkansas lakes. Assess the contributions and proportion of stocked fish to the natural lake populations.
3. Use spine microchemistry and aging of stocked lake Channel Catfish to determine the size when stocked (fingerling, yearling, or catchable). Assess the success of stocking fingerlings and catchable sizes in lakes. Compare the proportion of hatchery origin fish stocked as fingerlings, yearling, or catchable size in each lake.

Current Status: Completed

Abbreviated Abstract:

The goals of this study were to determine the contributions of stocked fish, determine fish size at stocking, and to assess the contribution of stocked fingerling, yearling, and catchable size catfish to Channel Catfish populations in six state-owned lakes in Arkansas. Fish were obtained from three hatcheries and six lakes in different ecoregions across Arkansas to assess whether chemical signatures differed among locations. Sectioned pectoral spines were analyzed for Sr:Ca and Ba:Ca using laser ablation-ICPMS to determine whether location-specific Sr:Ca and Ba:Ca signatures were reflected in pectoral spine samples and to assess the accuracy with which fish could be assigned to their collection location using spine Sr:Ca and Ba:Ca. Fin spine core Sr:Ca and Ba:Ca data were also used to identify stocked fish and determine size at stocking for hatchery-origin fish sampled from each of the six lakes. The number of samples per lake ranged from 12-15 for three lakes and 76 samples from each of the three remaining lakes. Spine microchemistry represents a non-lethal approach to identify stocked catfish and infer size at stocking, which will better inform allocation of hatchery-produced fish. Differences in pectoral spine Sr:Ca edge signatures among locations were detected, which were primarily driven by differences in geology among ecoregions. Assignment accuracy of fish to collection location using random forest modeling was 88% or greater for all but one of the study lakes. This allowed for application of the random forest model on pectoral spine core Sr:Ca and Ba:Ca to assign individuals sampled from the lakes as hatchery or wild origin. Among all the Channel Catfish sampled from the six lakes, 45% were identified as hatchery origin and 46% of those were stocked as catchable size fish. Contributions of stocked fish varied among study lakes from 33% to 100%. There was one lake that had no stocking contribution. This was the first study to demonstrate that pectoral spine microchemistry can be used for assessing both stocking contribution and inferring fish size at stocking. Overall, this study will aid in the allocation of hatchery reared catfish by management biologists and could lead to more projects focused on exploring stocking contribution by microchemistry, such as assessment of how habitat enhancement may influence the contribution of natural reproduction to catfish populations.

Project Name or Description: Tandem Baited Hoop Net Bait and Month Evaluation

Contact Information:

Name: Justin Homan

Coauthors: Micah Tindall

Email: justin.homan@agfc.ar.gov

Phone: 870-318-5987

Objective: Compare cheese bait and soap in TBHN for channel catfish in small impoundments and evaluate monthly catch through summer.

Current Status: Sampling complete, data being analyzed.

Abbreviated Abstract: The Arkansas Game and Fish Commission has been using tandem-baited hoop nets (TBHN) to sample Channel Catfish in small impoundments since about 2012. Samples were initially performed using cheese bait. However, Zote soap has been used as the primary bait by several districts since about 2015. Some districts have documented dramatic changes in Channel Catfish populations following the change from cheese bait to soap bait. We sampled Channel Catfish in two small impoundments (<500 acres) using TBHN monthly from May to October during 2022. One lake is stocked annually with yearling Channel Catfish (Lake Des Arc) while another lake has a naturally reproducing population (Lake Greenlee). Each sample was comprised of four sets baited with cheese bait and four sets baited with Zote soap. Each net was baited with either 1200 g of Zote soap or 1200 g of cheese bait. On Lake Des Arc, catch was highest during August (cheese = 65 fish/set [SE=8] and soap = 7 fish/set [SE=2]) however month does not appear to be a significant factor in catch. Catch was highest with cheese during all months. On Lake Greenlee, catch was highest during July (cheese = 167 fish/set [SE=23] and soap = 91 fish/set [SE=32]). Catch was also highest using cheese in each month. We plan to examine size structure of catch by bait type as well. The results of this study will be used to inform the catfish standard sampling procedures for Arkansas.

Project Name or Description: A Comparison of Two Low-Frequency Electrofishing Waveforms on Capture Efficiency and Length Distribution of Flathead Catfish in the lower Ouachita River, Arkansas.

Contact Information:

Name: Jacob Martin

Coauthors: Tyler Thomsen

Email: Jaocb.Martin@agfc.ar.gov

Phone: 870-375-3066

Objective: Compare waveforms to optimize sampling efforts for Flathead Catfish

Current Status: In progress more samples to be conducted summer of 2023

Abbreviated Abstract:

Understanding how varying duty cycle affects capture efficiency and length distributions of Flathead Catfish can aid fisheries managers in data collection. Two pools of the Ouachita River have been sampled so far for this project, the Thatcher Pool (2022) and the Felsenthal Pool (2021). River kilometers were randomly selected within each pool (21 for Felsenthal Pool and 20 for Thatcher Pool) for low frequency electrofishing. At each randomly selected river kilometer, two 10-minute long electrofishing runs were conducted using a duty cycle of 10% and a duty cycle of 30%, pulse-width was held constant at 15Hz. Length distributions varied significantly in Felsenthal Pool but did not differ in Thatcher Pool, likely due to low sample size. Catch per unit effort (CPUE) did not differ significantly among duty cycles

for Flathead Catfish overall. However, a zero inflated negative binomial model revealed CPUE of quality sized (≥ 510 mm) Flathead Catfish was 31% higher with a duty cycle of 10 than a duty cycle of 30 (P=0.039). These data suggest that a length bias associated with duty cycle for Flathead Catfish may exist. Additional study sights will be sampled in summer 2023 to examine this relationship further.

Project Name or Description: An evaluation of the Channel and Flathead Catfish populations in the Little Missouri and Ouachita Rivers after the closure of commercial fishing.

Contact Information:

Name: Tyler Thomsen

Coauthors: Jacob Martin

Email: tyler.thomsen@agfc.ar.gov

Phone: 870-291-5546

Objective: Evaluate the Channel and Flathead catfish populations in the Little Missouri and Ouachita Rivers to determine the effects of the removal of the commercial fishing season.

Current Status: In progress, sampling will end in June of 2024.

Abbreviated Abstract:

Commercial fishing took place on sections of the Little Missouri and Ouachita Rivers until 2005. Anecdotal information from anglers suggested that Flathead and Channel Catfish populations were declining, resulting in the closure of the commercial fishing season. District 6 fisheries biologists evaluated the catfish populations using hoop nets from 2004 to 2006. To determine how the removal of commercial fishing affected the catfish fishery, we started repeating that study in 2022. The lower section of the Little Missouri river is the only section that has been sampled so far. The next two years will focus on the Ouachita River. Data collected during this study will aid fisheries managers in making decisions on the opening or closing of commercial fishing seasons.

Florida

Name of Representative to Technical Committee: Andy Strickland

Project Name or Description: Spotted Bullhead Population Genetics and Status Assessment

Contact Information:

Name: Jason O'Connor (FWC)

Coauthors: Travis Tuten, Chris Anderson, Brandon Barthel, Chris Paxton, Josh Wilsey

Email: Jason.OConnor@MyFWC.com

Phone: (352) 415 - 6962

Objective:

1) Determine the extent of occurrence and relative abundance of Spotted Bullhead in river systems across Florida
2) Evaluate genetic relationships among spotted bullhead populations statewide

Current Status: In progress

Abbreviated Abstract:

Spotted Bullhead are a small-bodied ictalurid that occupy a relatively restricted range, within the Gulf Coast drainages of Florida, Alabama and Georgia. The species has been considered at risk of becoming threatened in significant portion of its range due to habitat loss and predation from non-native Flathead Catfish populations (Jelks et al. 2008, Dobbins et al. 2012). Despite evidence of conservation concern dating back over a decade, there has been little recent effort targeting catfish in Florida rivers. Our objective was to reassess the current distribution and relative abundance of Spotted Bullhead throughout their range in Florida. We conducted standardized low-pulse electrofishing surveys, targeting all catfish species in 13 river systems between September 2021 and August 2022. Each catfish was identified, measured (TL) and weighed. We also collected tissue samples from each Spotted Bullhead and recorded basic water quality and habitat information at each site surveyed. Across all rivers we collected nine catfish species. Spotted Bullhead were collected in eight of the 13 rivers surveyed and were the most abundant catfish species collected in the Suwannee (0.3 ± 0.1 fish/min), Santa Fe (0.6 ± 0.3 fish/min), Withlacoochee (Madison Co., 0.3 ± 0.1 fish/min) and Withlacoochee (Citrus Co., 2.3 ± 0.6 fish/min) Rivers. Spotted Bullhead were collected at low abundance in Econfina Creek (0.01 ± 0.01 fish/min), St. Marks River (0.01 ± 0.01 fish/min) and Ochlockonee River (0.01 ± 0.01 fish/min). Flathead Catfish were the most abundant species collected in the Apalachicola (1.2 ± 0.2), Chipola (0.4 ± 0.1), Choctawhatchee (0.5 ± 0.1), and Ochlockonee (0.5 ± 0.1) Rivers. Our result suggest that Spotted Bullhead are abundant the Suwannee and Withlachoochee River drainages in the Florida peninsula, where Flathead Catfish are not currently established and rare in major panhandle drainages. We did not collect Flathead Catfish in the smaller panhandle drainages sampled, suggesting that they have not established in these systems or occur at lower abundance than in the larger systems. Previous research has suggested that there may be subtle morphological variation between populations east and west of the Ochlockonee River. We plan to use the tissue samples collected to evaluate whether there is evidence of genetic structure across these drainages.

Georgia

Name of Representative to Technical Committee: Jim Page

Project Name or Description: Noteworthy Recreational Angler Catches

Contact Information:

Name: Jim Page

Coauthors: Tim Bonvechio, Anthony Rabern

Email: Jim.Page@dnr.ga.gov

Phone: 912-285-6485

Objective: To report catches of noteworthy catfish captured by recreational anglers

Current Status: Ongoing

Abbreviated Abstract: The Georgia Dept. of Natural Resources (GADNR) is tasked with managing natural resources in our state, including those enjoyed for the purposes of fishing. In that realm, GADNR celebrates and promotes the diversity of fish species we have to offer to the fishing public, including several catfish species. During the reporting period, the following notable catfish catches were reported:

New LAKE and RIVER Records:

West Point Lake – Blue Catfish – a new record 61lb blue catfish was caught 10/22/2022.
Etowah River – Flathead Catfish – a new record 38.05lb flathead catfish was caught in June 2022.
Etowah River –Blue Catfish – a new record 27.05lb flathead catfish was caught in June 2022.
Lake Sinclair – Flathead Catfish – a new record 39lb flathead catfish was caught in August 2022.
Lake Oconee – Flathead Catfish – a new record 52.5lb flathead catfish was caught in April 2022.

West Point Lake – Blue Catfish

Etowah River – Flathead Catfish


Etowah River – Blue Catfish


Lake Sinclair – Flathead Catfish


Lake Oconee – Flathead Catfish

Noteworthy catches:
Catfish continue to be a favorite target species for many of our youth anglers. Below are photos of just a few of many youth who caught some award-sized catfish at various Kids Fishing Events around the state.

We congratulate each of the anglers who captured these impressive fish, and we are excited to see records continue to fall! For those who haven't done so yet, GO FISH GEORGIA!!!!

Project Name or Description: Flathead and Blue Catfish Removal on the Satilla River

Contact Information:

Name: Jim Page

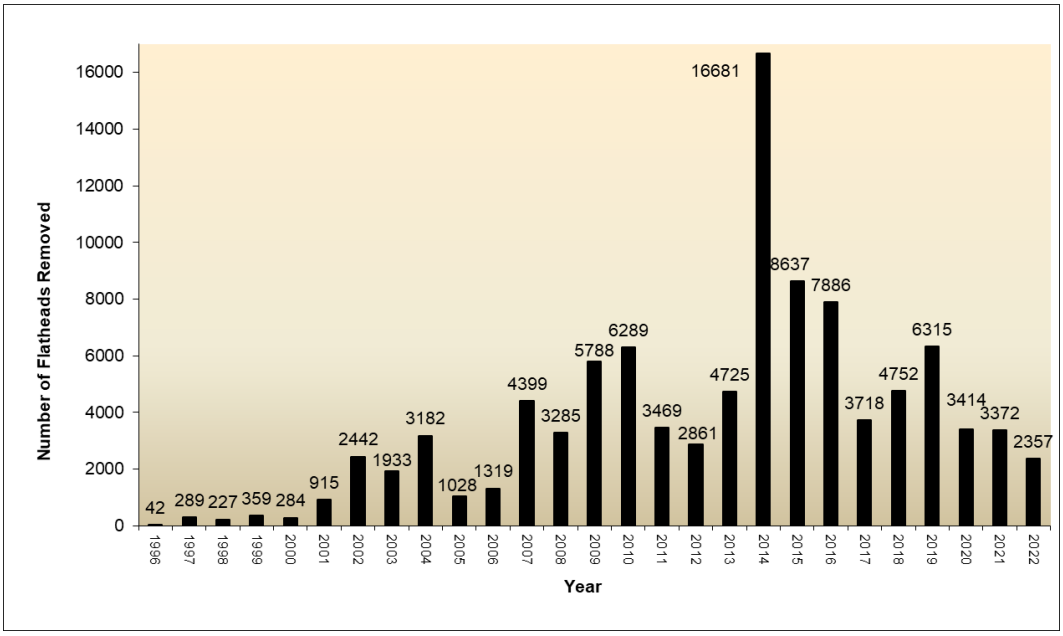
Coauthors: Jason Mitchell, Hunter Smith, David McGhin, Chad Sexton

Email: Jim.Page@dnr.ga.gov

Phone: 912-285-6485

Objective: To evaluate the effects of long-term boat electrofishing removals on the survival, biomass, condition, relative abundance, size structure, and age structure of flathead catfish in the Satilla River, GA.
Current Status: Ongoing effort

Abbreviated Abstract: Modeling indicates that increased exploitation on the flathead catfish (*Pylodictis olivaris)* can be an avenue for native species recovery. After flatheads were introduced into the Satilla River in the 1990's, the GADNR initiated an intensive electrofishing removal effort in 2007. From 2007 to 2022, 87,948 flatheads (2,357 in 2022) totaling 76,662 kg (4,208 kg in 2022) were removed from roughly a 150-km stretch of the Satilla River. Size structure has changed substantially from containing many large individuals (≥510mm TL) in 2007 to mainly small fish (≤375 mm TL) in recent years. Total biomass per effort ranged from 57.05 kg/hr in 2007 to 10.9 kg/hr in 2012, totaling 23.2 kg/hr in 2022. The average weight of removed fish ranged from 2.6kg in 2007 to 0.4kg in 2013, equaling 1.8kg in 2022. Fish age structure continues to be truncated, and there is evidence for higher recruitment and earlier maturation, which would require that intensive harvest be maintained to prevent the population from rebuilding within 2-5 years. Catch-curves revealed total annual mortality (*A*) rates for the 10-year period (2007-2017) ranged from 37-63%, averaging 51%. For a long-lived species that presumably cannot withstand excessive rates of exploitation (i.e., >25% U), flatheads do seem to be responding to removal efforts. Our results indicate that an electrofishing removal program is a reasonable management option for state agencies aiming to control this apex predator, though continual removal will be required.



The discovery of 7 blue catfish (*Ictalurus furcatus*), a second non-native, in 2011 led to GADNR staff to remove this species as well. Zero fish were seen from 2012 – 2015. In 2016, 224 blue catfish were removed, including a large gravid female (840mm and Age 7), suggesting reproduction is occurring. In 2019, staff removed 663 blue cats, followed by 187 in 2020 and 80 in 2021. In 2022, staff removed the highest number of blue catfish ever from the river, with 1,552 blue catfish being harvested. This significant increase is alarming, and the presence of gravid females suggest reproduction is occurring in the river.

Project Name or Description: Annual Standardized Sampling of Catfish on Various GA Rivers

Contact Information:

Name: Jim Page

Coauthors: Several DNR staff

Email: Jim.Page@dnr.ga.gov

Phone: 912-285-6485

Objective: To Monitor and Manage Catfish Populations in Various Georgia Rivers
Current Status: Ongoing effort

Abbreviated Abstract: The GADNR conducts standardized sampling of catfish populations via electrofishing in several Georgia rivers. These include the Altamaha, Chattahoochee, Flint, Ogeechee, Satilla, and Savannah (all annually), along with the Ocmulgee (every 2 years) rivers in 2022. Catch rates varied by river, but were as follow (CPUE is #fish/hr):

Altamaha (CPUE): Blue Catfish (2022: 97.33; 2021: 39.5); Flathead Catfish (2022: 129.67; 2021:114); Channel Catfish (2022: 7.33; 2021:34.7)

Flint (CPUE): DID NOT SAMPLE IN 2022, AS RIVER WAS TOO LOW

Ocmulgee (CPUE): DID NOT SAMPLE IN 2022

Ogeechee (CPUE): Snail Bullhead (2022: 47.81 fish/hr; 2021: 57.2 fish/hr); White Catfish (2022: 30.98 fish/hr; 2021: 32 fish/hr)

Satilla (CPUE): Flathead Catfish (2022: 15.38 fish/hr; 2021: 42 fish/hr); Channel Catfish (2022: 36.15 fish/hr; 2021:15.2 fish/hr); White Catfish (2022: 1.5 fish/hr; 2021: 28.8 fish/hr)

Savannah (CPUE): Snail Bullhead (2022: 21 fish/hr; 2021: 17.6 fish/hr); White Catfish (2022: 20 fish/hr; 2021: 17.6 fish/hr); Flathead Catfish (2022: 16.67 fish/hr; 2021:21.2 fish/hr)

Major takeaways from 2022 sampling, as compared to the previous year, were that blue catfish catches in the Altamaha were significantly up but channel catfish numbers were down; and flathead catfish and white catfish in the Satilla were down, while channel catfish numbers were up.




Kentucky

Name of Representative to Technical Committee: Jay Herrala
Project Name or Description: Evaluation of new recreational and commercial regulations on catfish in the Ohio River

Contact Information:

Name: Jay Herrala

Coauthors:

Email: jason.herrala@ky.gov

Phone: (502) 892-4468

Objective: 1) Determine abundance (CPUE), size structure, and condition of blue catfish, channel catfish, and flathead catfish in the Ohio River. 2) Evaluate the effects of new regulation on blue catfish, channel catfish, and flathead catfish in the Ohio River, particularly trophy-size catfish. 3) Quantify age, growth, and mortality of the three species.

Current Status: Ongoing

Abbreviated Abstract:

The conflict between commercial fishermen and recreational catfish anglers on the Ohio River has been apparent for nearly a decade, with the main issue being a perceived switch from a harvest market predominantly for flesh to a largely trophy fish harvest for sale to pay lakes component. In 2013, KDFWR standardized its catfish data collection methods and began expanding the effort river-wide to more accurately estimate population dynamics of blue catfish, channel catfish, and flathead catfish. On December 1, 2014 the following regulation became law:

Recreational anglers on the main-stem Ohio River are allowed one blue catfish ≥35.0 in, one flathead catfish ≥35.0 in, and one channel catfish ≥28.0 in per day. Harvest of fish below their respective length limits is not regulated.

The majority of commercial fishers fishing in the legal waters of the Ohio River and its tributaries are allowed one blue catfish ≥35.0 in, one flathead catfish ≥35.0 in, and one channel catfish ≥28.0 in per day. However, up to 50 commercial fishers (This number was reduced to 15 commercial fishers in 2019) that harvested over 10,000 lbs of catfish in at least 2 of the last 3 years along with an additional six commercial fishers, who are chosen by a lottery drawing, are allowed a daily

harvest of four (in aggregate) blue catfish and flathead catfish ≥40.0 in and channel catfish ≥30.0 inches in Kentucky's portion of the Ohio River and its tributaries open to commercial fishing below Cannelton Lock and Dam. Harvest of fish below their respective length limits is not regulated.

Accusations by recreational anglers that overharvest was still occurring surfaced again in 2018. Multiple meetings were held with KDFWR staff, recreational anglers, commercial fishermen, and paylake owners all present to work towards another compromise. Several regulations were proposed and submitted for review. At the time of this report the following regulations have been made law:

The number of commercial fishers awarded trophy permits was reduced to 15 (previously 50).

There will be no more than two licensed commercial fisherman per boat. If more are present, they may only keep a two limits of trophy catfish.

A possession limit (twice the daily limit) was placed on trophy catfish for commercial fishers. This applies when on the water and when trailering fish.

Trotlines—Record high CPUE of blue catfish occurred in 2022 (CPUE = 7.1 fish/50 hooks). Catch rate of blue catfish has been gradually increasing since 2013. Catch rate of trophy-size (≥35.0 in) blue catfish has remained consistent since 2018.

Hoop nets— Catch rate of channel catfish was 2.1 fish/net-night and has continually decreased since 2017. Flathead catfish CPUE was 1.5 fish/net night, a nearly two-fold increase from 0.8 fish/net-night in 2021.

Electrofishing— Blue catfish CPUE (29.7 fish/hr) was the second highest ever observed and was well above the historical average (CPUE = 18.1 fish/hr). CPUE of flathead catfish was 47.1 fish/hr which is also above the historical average (CPUE = 36.5 fish/hr).

Age, growth, and mortality—Otoliths (up to 10 per inch class) were taken from blue catfish (n=340), channel catfish (n=200), and flathead catfish (n=348). Otoliths are still being processed and aged, so von Bertalanffy equations and mortality estimates are unavailable at this time.

Project Name or Description: Can channel catfish nesting boxes replace stocking in small impoundments?

Contact Information:

Name: Tom Timmerman

Coauthors:

Email: tom.timmerman@ky.gov

Phone: (606) 783-8650

Objective: Because channel catfish are not able to produce self-sustaining fisheries in small impoundments, KDFWR has been experimenting with artificial nesting boxes as a replacement to stockings.

Current Status: Project is in its early phases with no processed results at this time.

Abbreviated abstract: In most small impoundments, channel catfish do not produce a self-sustaining population of fish and anglers are reliant on state agencies to stock fish in order to maintain a fishable populations. The limiting factor in most instances is a lack of spawning habitat such as: hollow logs, undercut banks and rock crevices. Several other states have experimented with adding artificial spawning habitat in the form of nesting boxes to their lakes and have had success in creating habitat necessary to have self-sustaining fish populations in small impoundments. With hatchery space limited and expense of raising and stocking these fish high, alternative strategies for providing fish to small impoundments is of particular interest to state agencies. If channel catfish can self-sustain through artificial nesting boxes, then hatcheries can be freed up to use space and funding for other projects. The goals of this project are to (1) determine if artificial nesting boxes can create a self-sustaining population of channel catfish and (2) if so what rate of boxes are needed to maintain high quality populations of channel catfish.

Louisiana

Name of Representative to Technical Committee: Andy Strickland

Nothing to report / No future project planned

Mississippi

Name of Representative to Technical Committee: Samantha Bergeron

Project Name or Description: MS River Angler Catfish Tagging Project

Contact Information:

Name: Samantha Bergeron
Co-Authors: Jerry Brown
Email: Samantha.Bergeron@wfp.ms.gov
Phone: (601)432-2212

Objective: To obtain recapture and movement data for large angler caught catfish in the MS River

Current Status: Ongoing

Abbreviated abstract:

MDWFP is cooperating with trophy catfish fishing guides to monitor large catfish recapture and movement on the Mississippi River. The fishing guides are collecting length (in) and weight (lbs) for catfish caught, along with GPS coordinates of the release locations. Catfish are caught using hook and line, double tagged with floy tags, and released at or near the capture locations. Fishing guides report the data to MDWFP on a monthly basis. The tagging project began in March 2020 and as of December 14, 2022 two recaptures have been reported. A total of 191 catfish fish have been tagged consisting of 188 Blue Catfish and three Flathead Catfish. The average total length of catfish tagged was 39.3 inches and the mean weight was 31.2 pounds.

Missouri

Name of Representative to Technical Committee: Kyle Winders

Project Name: Flathead Catfish Population Assessments in Several of Missouri's Large Reservoirs and Small Impoundments

Contact Information:

Name: Zach Ford (Missouri Department of Conservation)
Co-PI: Dr. Leah Berkman (Missouri Department of Conservation)
Email: zach.ford@mdc.mo.gov
Phone: 660-885-8179 x4936

Objectives:

1.) Sample Flathead Catfish populations in a suite of large reservoirs (ranging from 2,400 to 55,600 acres) and small impoundments (<200 acres) to determine population demographics (e.g., mean total length, proportional size distributions, age structure, total annual mortality, etc.).
2.) Examine the population genetic structure including genetic effective population size (N_e), level of inbreeding, population mixing/isolation, and predict the effects of low, medium, and high exploitation on N_e and reproductive variance of Flathead Catfish in each waterbody.
3.) Conduct modeling simulations of each Flathead Catfish population to assess existing regulations and explore the potential to improve or sustain each fishery.
4.) Develop long-term standard sampling protocols for managers to examine population trends.

Status: Low-frequency electrofishing (15 Hz/30% duty cycle pulsed DC) was conducted again in 2022 (Year 2) in large reservoirs (Table 1) and small impoundments (Table 2) using standardized electrofishing outputs recommended by Thomas and Morris (2020). Processing and aging of >2000 total pectoral spines and genetic analysis from sampled Flathead Catfish continued in 2022.

Population genetic analysis focused on developing and testing microsatellite primer pairs, testing primers for reliable amplification in a multiplex framework, extracting DNA from fin clip samples of *P. olivaris* individuals collected in 2021-2022, genotyping *P. olivaris* individuals using the identified markers, and analyzing the preliminary data for effective population size & population genetic structure. The accuracy and precision of N_e estimates has also been conducted to determine remaining tissue samples needed for further analysis.

Additional project sampling will be conducted in 2023 to obtain additional population data and fill sample size quotas for age-growth and genetic analysis.

Table 1. Catch statistics for Flathead Catfish in each **reservoir** collected with boat electrofishing in 2021. Ranges are shown in parentheses. Effort is the time (h) electrofishing output power was on. CPUE is number of fish/hour. Proportional-size distributions (PSD) of Flathead Catfish collected in each waterbody were calculated using Flathead Catfish length categories described by Anderson and Neumann (1996) as follows: stock (14 in or 350 mm), quality (20 in or 510 mm), preferred (28 in or 710 mm), memorable (34 in or 860 mm), and trophy (40 in or 1020 mm).

Reservoir	Surface Acres	Year	Sample Runs[1] (N)	Fish Collected (N)	Total Effort (hrs)	Total CPUE	$CPUE_{<14"}$	$CPUE_{\geq 28"}$	Mean TL (in)	PSD_Q	PSD_P	PSD_M	PSD_T
Pomme De Terre[2]	7,820	2021	5	49	1.69	29.0	17.2	2.4	14.2 (3.3 – 39.9)	45	20	5	0
Smithville	7,190	2021	27	427	6.75	63.3	26.7	12.9	19.0 (3.3 – 46.3)	73	35	17	5
Stockton	25,900	2021	38	109	8.50	12.8	2.1	1.8	19.9 (6.8 – 46.8)	45	17	8	1
Table Rock	43,100	2021	10	100	3.09	32.3	4.2	1.6	19.6 (9 – 38.8)	53	6	2	0
Truman	55,600	2021	59	421	13.89	30.3	11.4	3.9	18.2 (4.1 – 51.25)	57	21	11	3

[1]Number of individual sampling runs conducted with electrofishing power on for a discrete amount of time (~3-15 minutes) across a range of sample dates and sites distributed throughout each reservoir.
[2]Pilot sampling conducted to explore habitats and examine electrofishing success for future sampling efforts.

Table 2. Catch statistics for Flathead Catfish in each **small impoundment** collected with boat electrofishing in 2021 during population marking (day 1) and recapture (day 2) runs where fish were marked with fin clips. Ranges are shown in parentheses. Effort is the time (h) electrofishing output power was on. CPUE is number of fish/hour. Proportional-size distributions (PSD) of Flathead Catfish collected in each waterbody were calculated using Flathead Catfish length categories described by Anderson and Neumann (1996) as follows: stock (14 in or 350 mm), quality (20 in or 510 mm), preferred (28 in or 710 mm), memorable (34 in or 860 mm), and trophy (40 in or 1020 mm).

Small Impoundment	Surface Acres	Day 1 Marking Run (N)	Day 2 Recap Run (N,%)	Total Fish Collected (N)	Total Effort (hrs)	Total CPUE	$CPUE_{<14"}$	$CPUE_{\geq 28"}$	Mean TL (in)	PSD_Q	PSD_P	PSD_M	PSD_T
Bilby Ranch	110	166	21 (12.7%)	307	1.70	180.6	96.5	20.0	16.4 (4.2 – 41.3)	66	24	11	4
Cameron #3 (Eagle Lake)	96	71	10 (14.1%)	120	1.67	72.1	11.4	39.0	28.4 (7.2 – 47.2)	91	64	42	21
Che-Ru Lake	160	44	13 (29.5%)	94	1.81	52.0	26.0	3.9	15.8 (7.5 – 40.5)	34	15	11	2
Higginsville City Lake	150	57	7 (12.3%)	86	3.04	28.3	2.6	9.5	24.7 (7.8 – 43.8)	77	37	17	5
Limpp Lake	29	6	2 (33.3%)	15	0.76	19.9	0	4.0	24.4 (18.8 – 30.2)	87	20	0	0
Little Compton Lake	40	7	3 (42.9%)	22	1.25	17.7	3.2	4.8	23.9 (10.3 – 35.8)	100	33	6	0
Willow Brook	100	72	4 (5.6%)	130	1.78	72.9	9.5	21.9	23.7 (8.2 – 38.8)	86	35	8	0

Project Name or Description: Post-regulation evaluation of a protected slot-length limit for Blue Catfish at Harry S Truman Reservoir and Lake of the Ozarks

Contact Information:

Name: Zach Ford (Missouri Department of Conservation)
Email: Zach.Ford@mdc.mo.gov
Phone: 660-885-8179 x4936

Objectives: 1) Evaluate changes in length distributions and age structure of Blue Catfish populations that have occurred since the regulation change in 2014. 2) Characterize current angler satisfaction and support for the regulations.

Status: The Department implemented a regulation change for Blue Catfish *Ictalurus furcatus* at Truman Reservoir (55,600 acres) and Lake of the Ozarks (54,000 acres) effective March 1, 2014: a protected slot-length limit of 26 ─ 34 inches total length (TL) and a daily limit of 10 with no more than 2 Blue Catfish (of the 10-daily limit) longer than 34 inches.

Abbreviated Abstract: The management objectives of this regulation change were to:

1) Protect medium-sized and increase the number of larger Blue Catfish
2) Increase harvest of smaller Blue Catfish below the protected slot to improve growth rates across the population
3) Retain the level of participation by catfish anglers
4) Maintain good relations with all stakeholders while continuing to promote local catfish-based economy
5) Provide a sustainable, quality, Blue Catfish fishery for present and future generations to enjoy

For this evaluation, three consecutive years of post-reg sampling will be conducted using methods identical to three years of baseline sampling (prior to the reg change) at randomly selected sites (from a pool of known angling sites) throughout each reservoir during late summer into fall (August to November). Anchored jug lines baited with Gizzard Shad will be deployed at sites throughout both reservoirs in desired habitats (e.g., river channel bends and flats close to timber, etc.) to maximize catch rates of larger Blue Catfish during each sampling period. This method is commonly used by catfish anglers and is effective at both reservoirs to catch Blue Catfish during the fall. Sampling commenced in August-November 2022 with data entry/analysis and pectoral spine processing underway.

Project Name or Description: Big Rivers Catfish Questionnaire and Public Comment
Contact Information:

Name: Kyle Winders
Email: kyle.winders@mdc.mo.gov
Phone: 660-646-3140 x1377

Name: Joe McMullen
Email: joe.mcmullen@mdc.mo.gov

Phone: 314-301-1506 x4215

Status: Completed
Abbreviated Abstract: To determine public preferences related to catfish fishing and management on

Missouri's big rivers an electronic questionnaire was distributed during July 2021. All licensed Missouri residents with an email address on file were invited to complete the questionnaire. A public comment period was advertised and comments were collected from 7 July to 15 August 2021.

Email invitations were sent to sport (n = 447,405) and commercial (n = 123) fishing permit holders. Among sport fishing respondents (n = 46,083; 10.3% response rate), 30,613 indicated that they fished for catfish, which ranked third in popularity behind crappie and largemouth bass. Of those who sport fished for catfish, 6,381 fished the Missouri River and 3,625 fished the Mississippi River. The preferences of big rivers catfish anglers and commercial fishers included:

- Most sport anglers fished St. Louis and Central regions.
- A majority of sport anglers and commercial fishers indicated that the size and number of catfish caught were equally important.
- Sport anglers and commercial fishers indicated that catching catfish to eat was more important than catching trophy size catfish.
- Sport anglers preferred creels of intermediate numbers and weights of catfish (four 5-pound fish); commercial fishers preferred larger flathead catfish (two 10-pound fish) and preferences varied for blue catfish.
- A majority of sport anglers and commercial fishers preferred keeping catfish 18" in length or smaller.
- Sport angler support for/opposition to a '1-over' rule (one catfish over 30" may be kept as part of a daily limit) for blue and flathead catfish was split.
- Sport angler support for/opposition to a minimum length limit on blue and flathead catfish was split; a majority of commercial fishers were opposed.

Project Name or Description: Commercial Fishing Program

Contact Information:

Name: Joe McMullen
Email: joe.mcmullen@mdc.mo.gov
Phone: 314-301-1506 x4215

Objectives: Document and summarize Missouri's commercial fish harvest for 2021 and annual harvest trends since 1945.

Status: Ongoing

Abbreviated Abstract: Blue catfish accounted for the largest proportion (63%) of the total catfish harvest and increased from 75,281 lbs. in 2020 to 91,752 lbs. in 2021. Flathead catfish accounted for 22% of the total catfish harvest, decreasing 32,840 lbs. in 2020 31,202 lbs. in 2021. Channel catfish accounted for 15% of the total catfish harvest, increasing from 16,619 lbs.

in 2020 to 21,176 lbs. in 2021 (highest harvest since 2012). No bullhead harvest was reported during 2021.

Pounds of commercially harvested catfish, by river and for all rivers combined during 2010.

Species/ Species Group	Mississippi River	Missouri River	St. Francis River	Total
Blue Catfish	91,613	Prohibited	139	**91,752**
Flathead Catfish	29,983	Prohibited	1,219	**31,202**
Channel Catfish	20,324	Prohibited	852	**21,176**
Bullheads	0	0	0	**0**
Total	**141,920**	**0**	**2,210**	**144,130**

North Carolina

Name of Representative to Technical Committee: T. D. VanMiddlesworth
Project Name or Description: Pee Dee River Catfish Survey

Contact Information:

Name: Casey Joubert

Coauthors: Troy Thompson

Email: casey.joubert@ncwildlife.org

Phone: 910-729-0872

Objective: To collect necessary population characteristics of all catfish present in the Pee Dee River to assess current and future catfish regulations.

Current Status: Completed (final report in progress)

Abbreviated Abstract: A fishery for invasive catfish has developed in the Pee Dee River, North Carolina. In 2019, following overexploitation concerns from anglers, a regulation measure was put in place to limit the daily harvest of catfish in the Pee Dee River, below Blewett Falls Dam to the South Carolina border, to 5 fish, in aggregate. Electrofishing surveys were conducted fall 2018, spring 2019, fall 2019, and spring 2020 to evaluate invasive Flathead Catfish *Pylodictis olivaris*, Blue Catfish *Ictalurus*

furcatus, and non-native Channel Catfish *I. punctatus* populations in the Pee Dee River. Blue Catfish (n=251), Flathead Catfish (n=178), and Channel Catfish (n=254) were collected and no native catfish were observed. Mean CPUE for Blue, Flathead, and Channel catfish was 10.0, 7.1, and 10.1 fish/hour, respectively. Otoliths were removed from a subsample of Blue (n=154) and Flathead catfish (n=38), and aging was completed. Blue Catfish ranged from 3–25 years old, with a mean age of 10.23 years old. Flathead Catfish ranged from 0–15 years old, with a mean age of 4.47 years old. Very few catfish had a *Wr* below 80, indicating most fish were in good condition. Results indicate an abundance of invasive catfish in the Pee Dee River suggesting restrictive harvest regulations may not be biologically warranted.

Project Name or Description: Jordan Lake Catfish Survey

Contact Information:

Name: Kelsey Roberts

Coauthors: Seth Mycko

Email: kelsey.roberts@ncwildlife.org

Phone: 336-290-0052

Objective: To collect baseline data of native and naturalized catfishes in reservoirs containing invasive catfish populations.

Current Status: Completed

Abbreviated Abstract: A total of 1,096 Channel Catfish and 273 White Catfish were surveyed using gillnets in B. Everett Jordan Lake during winter from 2018–2021. Channel Catfish ranged from 213–730 mm with a mean length of 449 mm TL. White Catfish ranged from 220–562 mm with a mean length of 331 mm. Relative weight (*Wr*) estimates for both species and all size classes were greater than 85. PSD values varied across years for both species. Ages ranged from age 1 to 16 for White Catfish and 0 to 19 for Channel Catfish. Both species exhibited fast growth where the average length at age 5 was 335 mm for White Catfish and 419 mm for Channel Catfish. Annual survival (*S*) estimates using the Chapman-Robson estimation method were *S* = 57% for Channel Catfish and *S* = 70% for White Catfish. To achieve a full size and age distribution, it is recommended that future catfish surveys in reservoirs utilize multiple methods, including high/low frequency electrofishing and/or tandem hoop nets in in addition to gillnets when necessary.

Project Name or Description: Evaluation of the Blue Catfish population in Lake Gaston, NC from 2016-2021

Contact Information:

Name: Kirk Rundle

Coauthors: David Belkoski

Email: kirk.rundle@ncwildlife.org

Phone: 252-903-7744

Objective: Our goals were to determine relative abundance, size structure, condition, growth, mortality, and diet composition for Blue Catfish in Lake Gaston.

Current Status: Completed (similar future in-depth samples recommended on a periodic basis)

Abbreviated Abstract: Blue Catfish sampling was initiated on Lake Gaston in 2016. Sampling consisted of electrofishing, juglines, and gill netting. A total of 664 Blue Catfish were sampled between November 2016 and January 2021, with 643 sampled with gill nets. No Blue Catfish were collected with electrofishing and gill nets were determined to be the superior sampling gear for Blue Catfish at Lake Gaston. Due to crowding and poor body conditions of small to medium size Blue Catfish, harvest is recommended and encouraged. Blue Catfish ages ranged from 3 to 25 and estimated annual mortality was low. The majority of Blue Catfish stomachs examined were empty or contained fish in various stages of digestion. This Blue Catfish study provided critical baseline information to gauge future changes in their population at Lake Gaston

Project Name or Description: Trent River Catfish Survey

Contact Information:

Name: T.D. VanMiddlesworth

Coauthors: Nick Shaver

Email: todd.vanmiddlesworth@ncwildlife.org

Phone: 919-210-4320

Objective: Complete the first targeted catfish survey of the Trent River to document catfish populations and with continued surveys assess population changes over time.

Current Status: Completed (final report in progress)

Abbreviated Abstract: In summer 2022, biologists with the North Carolina Wildlife Resources Commission completed the agency's first targeted catfish survey of the Trent River to document native and non-native catfish species. This survey was completed using a boat-mounted APEX electrofishing unit at random 1 rkm sites that ranged from Trenton, NC to New Bern, NC. Both high-pulse (120 Hz) and low-pulse (15 Hz) settings were used. During this survey, no native catfish species were collected or observed while Flathead Catfish (invasive), Blue Catfish (invasive), and Channel Catfish (non-native) were collected. Catches were low due to low water conditions and high salinity. However, the data from this survey suggests that invasive catfish are established and dominating the catfish populations in the Trent River. Also, this survey will serve as a baseline as we collect more data in the future to better inform catfish management in the Trent River.

Project Name or Description: An update of Stonecat distribution records in the French Broad River Basin in North Carolina

Contact Information:

Name: Dylan Owensby

Coauthors: Luke Etchison

Email: dylan.owensby@ncwildlife.org

Phone: 828-550-0064

Objective: Update the status and distribution of the Stonecat, *Noturus flavus*, (State Endangered) in the French Broad River Basin in North Carolina.

Current Status: Ongoing

Abbreviated Abstract: The Stonecat, *Noturus flavus*, is rare in North Carolina (State Endangered), and this is especially true in the French Broad River basin, where it has only been documented during 6 different survey efforts (only one of which has come in the last 15 years). In 2022, we initiated sampling efforts to update these records and search for possible range expansion in the French Broad River basin. So far we have completed 14 surveys, during which we were able to locate 4 Stonecats at 3 different sites. One of these sites was in the North Toe River, which represents the first ever documentation of the Stonecat in this river, and a substantial range expansion within the Nolichucky River sub-basin. The other three observations of Stonecat were located in the Ivy River, where it has not been observed since 1994. Although biologists were excited about these new records, several invasive Flat Bullhead, *Ameiurus platycephalus*, were also captured in the Ivy River for the first time. We plan to continue these monitoring efforts for the next several years.

Project Name or Description: Distribution and status update of the endemic Broadtail Madtom

Contact Information:

Name: Katharine DeVilbiss

Coauthors: Brena Jones

Email: Katharine.DeVilbiss@ncwildlife.org

Phone: 919-218-3809

Objective: Update records, survey new areas, and provide cover structures in targeted habitat within historic range.

Current Status: Ongoing

Abbreviated Abstract: The Broadtail Madtom (*Noturus* sp.) is a rare endemic species in the coastal plain of the Carolinas, currently in the process of description. In the last fifty years, there has been an observed decline in Broadtail Madtom detections in North Carolina, where it was previously documented in the Cape Fear and Lumber River basins. The species has not been found in the Cape Fear watershed since 2001, in part attributed to exotic Flathead Catfish introduction and predation. From 2019 through 2022, WRC staff conducted surveys and deployed artificial cover structures to increase understanding of the species' current population status. The cover structures, called 'madtom motels,' had two goals: to decrease predatory pressure on the fish and to increase the chances of detecting the tiny, cryptic fish during monitoring. A few populations of Broadtail Madtom persist in the Lumber basin, albeit in low abundance, in the main stem Lumber River, Shoe Heel Creek, and Joes Creek. A few individuals have also been documented using the motels. In the Cape Fear basin, no Broadtails have been detected so far; additional future surveys are planned. More 'madtom motel' deployments and monitoring will continue.

Project Name or Description: Carolina Madtom augmentations in the Tar Basin

Contact Information:

Name: Michael Fisk

Coauthors: Mike Walter

Email: michael.fisk@ncwildlife.org

Phone: (919) 758-9024

Objective: Augment existing Carolina Madtom populations and reintroduce the species back into suitable habitats within its historical range.

Current Status: Ongoing

Abbreviated Abstract: The Carolina Madtom, *Noturus furiosus* is a federally endangered fish endemic to the Tar and Neuse River basins in North Carolina. The species has been declining for decades as a result of land use practices, habitat alteration and fragmentation, water quality degradation, and the invasive Flathead Catfish, *Pylodictus olivaris*. The NC Wildlife Resources Commission is working with Conservation Fisheries, Inc and the US Fish and Wildlife Service to ark and propagate the Carolina Madtom to augment existing populations as well as reintroduce the species back into suitable habitats within its historical range. This year (2022) marks the second successful year of releasing Carolina Madtoms into two creeks in the upper Tar River basin. The NCWRC will continue to work with these partners to hold and propagate this species to reduce the risk of extirpation.

Oklahoma

Name of Representative to Technical Committee: Jeremy Duck

Project Name or Description: Gear Bias of low-frequency electrofishing for sampling Blue Catfish populations in Oklahoma reservoirs

Contact Information:

Name: Douglas Zentner, Oklahoma Department of Wildlife Conservation, Oklahoma Fisheries Research Laboratory

Coauthors: Graham Montague, Ohio Department of Natural Resources, Fairport Harbor
Dan Shoup, Oklahoma State University, Department of Natural Resource Ecology & Management
Richard Snow, Oklahoma Department of Wildlife Conservation, Oklahoma Fisheries Research Laboratory
Austin Griffin, Oklahoma Department of Wildlife Conservation, Oklahoma Fisheries Research Laboratory

Email: douglas.zentner@odwc.ok.gov

Phone: (405) 325-7288

Objective: Evaluate the accuracy of low-frequency electrofishing (LFE) size-structure data for Blue Catfish in Oklahoma Reservoirs

Current Status: Ongoing

Abbreviated Abstract: Blue Catfish, *Ictalurus Furcatus*, are a popular sportfish amongst anglers in the United States, particularly because they can reach trophy sizes and are highly edible. In Oklahoma, anglers can harvest 1 Blue Catfish over 30 inches and the goal of this regulation is increased abundance of larger fish. Anecdotal evidence from Oklahoma Department of Wildlife Conservation (ODWC) standardized sampling suggests that low-frequency electrofishing (LFE; 15 pulses per second) inaccurately samples the true population and may underrepresent the larger size classes of fish (>760 mm), making the assessment of this size limit on Blue Catfish populations difficult to interpret. Therefore, we designed a study to quantify the capture probability of Blue Catfish sampled with LFE by conducting a mark-recapture study in 3 Oklahoma reservoirs (Lake Arcadia, 2021; Wiley Post Reservoir, 2021; and Lake Ellsworth, 2022). We captured fish using LFE, gill nets, and juglines and tagged and released fish > 200-mm TL with modified Carlin dangler tags. Each was then sampled with LFE, gill nets, and juglines to collect recapture data. Size structure data suggested LFE collects small individuals relative to gillnets and jug lines (combined). Preliminary Cormack Jolly Seber mark-recapture models suggest stock-size fish have a higher capture probability than trophy-size fish in Lake Arcadia; however, there is little difference in capture probabilities amongst size classes of fish in Wiley Post Reservoir. Lake Ellsworth does not yet have sufficient data to analyze. We plan to continue our study over the next one to two years to compare size structure data and size-based capture probabilities across reservoirs

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Project Name or Description: Immobilization threshold of Blue Catfish exposed to low-frequency electrofishing

Contact Information:

Name: Douglas Zentner, Oklahoma Department of Wildlife Conservation, Oklahoma Fisheries Research Laboratory

Coauthors: Graham Montague, Ohio Department of Natural Resources, Fairport Harbor
Dan Shoup, Oklahoma State University, Department of Natural Resource Ecology & Management
Richard Snow, Oklahoma Department of Wildlife Conservation, Oklahoma Fisheries Research Laboratory
Patrick Cooney, Smith-Root, Inc.
Austin Griffin, Oklahoma Department of Wildlife Conservation, Oklahoma Fisheries Research Laboratory

Email: douglas.zentner@odwc.ok.gov

Phone: (405) 325-7288

Objective: Quantify the minimum power level needed to elicit a surfacing response by Blue Catfish when sampling with low-frequency electrofishing.

Current Status: Completed

Abbreviated Abstract: Standardizing electrofishing power output is important because it makes catch per unit effort (CPUE) more consistent such that changes in CPUE reflect population changes rather than changes in the gear's effectiveness. Many management agencies use low-frequency electrofishing for sampling Blue Catfish populations however, the power output required to elicit a surfacing response of Blue Catfish is unknown, making it difficult to pick a standardized power level. Therefore, we conducted wetlab LFE trials to determine optimal power densities that elicit a capture-prone surfacing response by Blue Catfish in order to provide recommended power standards for LFE. Blue Catfish were collected from Lake Arcadia, Lake Thunderbird, and Wiley Post Reservoirs in Oklahoma using low-frequency electrofishing and gill nets. Fish were transported to the Oklahoma Fisheries Research Laboratory's wet laboratory and held for 48 hours in a 3.63-m (long) x 0.6-m (wide) x 0.75-m (deep) fiberglass tank with 2 metal plates (serving as the cathode and anode at either side) that were 363 cm apart. All trials were conducted with a Smith Root APEX electrofishing unit operating at 15 Hz pulsed DC current and 25% duty cycle. During the 49 trials, the power density applied to the fish (Dm) ranged from 4.69×10^{-6} to 3.65 $\mu W/cm^3$, with fish surfacing when Dm values fell between 2.144×10^{-5} and 0.854 uW/cm^3. Trials in which at least 50% of fish in the tank surfaced (15 of the 49 trials) occurred at Dm values in a narrower range between 9.29×10^{-5} and 0.2084 $\mu W/cm^3$. Even within this narrower range, responses were highly variable and included trials where no fish surfaced, indicating a wide range of response rates across all power levels tested. Additional research is needed to better understand the Blue Catfish's unique electroreceptive mechanism that drives variability in the response to LFE and whether the proportion of fish surfacing is consistent enough to use catch per unit effort as an index of abundance. Our results suggest a power density applied to the fish (Dm) between 9.29×10^{-5} and 0.2084 $\mu W/cm^3$ is most likely to elicit a surfacing response in Blue Catfish, thus exposing them for capture. Further research is needed to map power densities over a range of distances from the electrode (i.e., relating power at the electrode [Pa] with power density in the water [Da]) to determine the area over which the electrofisher produces power within the effective power goal range. Once this information is available, it may be possible to produce

power standardization tables to guide power settings based on water conductivity. For now, we recommend use of the power tables from Bonar et al. (2009) as this is known to allow effective capture of catfishes and will standardize the effectiveness until such a time as a better power table could be produced for LFE.

Project Name or Description: An Evaluation of limitations to Channel Catfish Recruitment in Small Impoundments – Oklahoma Fishery Research Lab

Contact Information:

Name: Austin D. Griffin - *Oklahoma Department of Wildlife Conservation, Oklahoma Fishery Research Laboratory, 500 East Constellation, Norman, OK 73072*

Coauthors: Douglas L. Zentner, Jory B. Bartnicki, Richard A. Snow

Email: austin.griffin@odwc.ok.gov

Phone: (405) 325-7288

Objective:

1. We are currently sampling three small impoundments in the OKC region following SSP procedure to fulfill routine SSP sampling requirements, acquire age and sex data, and evaluate potential study lakes for this project by determining if natural recruitment is occurring per the ODWC Seven Inch Channel Catfish Criteria sheet (natural reproduction in non-stocked years).
2. We will map/quantify available potential spawning habitat in study lakes following the methods of Kaeser et al. (2013) and select lakes with relatively minimal spawning habitat.
3. We will evaluate the impact of Pennsylvania style catfish spawning boxes on recruitment (Porta and Smith 2013). With limited information available describing optimal cavity opening size, we will first attempt to correlate opening size to fish length by sampling fish in natural/existing cavities. Previous work suggests that limiting factors in the success of artificial spawning habitat include location in relation to suitable nursery habitat and oversized openings, which likely increase the possibility of nest/fry predation (Kratina and Corbin 2014).
4. We will then install spawning boxes at a set rate (1 box/2 hectares) the first year, doubling that rate each year for an additional 4 years (5 total) and evaluate relative abundance of 1 year old fish each year throughout the process using ½ inch hoopnets. We will assess overall relative abundance at the end of this time period and compare with baseline relative abundance established in objective 1. This will allow us to evaluate if we can increase recruitment, determine an optimum rate/amount of artificial spawning habitat, and determine the feasibility of offsetting the need for supplemental stocking.

Current Status: Ongoing

Abbreviated Abstract: Due to the popularity of channel catfish throughout the United States, many natural resource agencies invest substantial effort stocking and managing channel catfish populations to provide harvest and trophy opportunities (Bodine et al. 2013). In lieu of inadequate natural recruitment, it is commonplace for natural resource agencies to maintain put-grow-take channel catfish fisheries in small impoundments (< 500 acres; Michaletsz and Dillard 1999, Michaletz et al. 2011) using advanced fingerling or larger fish to deter predation (Storck and Newman 1988). Management and evaluation of stocking success of these populations requires reliable estimates of population rate functions (including recruitment), Variation in annual recruitment has been documented for channel catfish in reservoirs (Hubert 1999, Holley 2006, Settineri 2015) and recruitment can vary considerably between lakes (Tyszko et al. 2021). Also, minimal research has been conducted examining the habitat effects on channel catfish population characteristics in reservoirs and further research assessing natural recruitment is needed (Tyszko et al. 2021). Griffin et al. (2022) associated higher recruitment with increased exchange rate and volume and lower recruitment with increased total water hardness. However, a follow up tank experiment revealed no significant differences in hatch rate or larval abnormalities associated with increasing total hardness for channel catfish (Griffin et al. *in press*). Most of the previously mentioned factors that potentially effect recruitment are outside the control of fisheries managers. However, a major limiting factor that is likely within our power to manipulate is a lack of high-quality spawning habitat (Porta and Smith 2013).

To aid regional managers in the evaluation of fisheries stocked with seven-inch fish (per ODWC stocking criteria) and decrease the cost of stocking/rearing these fish we propose to evaluate spawning habitat in small impoundments and determine the feasibility of positively impacting recruitment with artificial nest boxes where needed.

Project Name or Description: An Investigation into the Effects of Elevated Water Hardness on Channel Catfish Egg Viability

Contact Information:

Name: Austin D. Griffin - *Oklahoma Department of Wildlife Conservation, Oklahoma Fishery Research Laboratory, 500 East Constellation, Norman, OK 73072*

Coauthors: Jory B. Bartnicki, Douglas L. Zentner, Richard A. Snow

Email: austin.griffin@odwc.ok.gov

Phone: (405) 325-7288

Objective:

1) Investigate the effects of varying concentrations of water hardness on channel catfish egg hatch rates
2) Determine if higher total water hardness levels impact the survivability of larva.

Current Status: Completed

Abbreviated Abstract: Channel catfish (*Ictalurus punctatus*) are a popular sportfish across the United States and are often stocked to enhance fishing opportunities. There has been increased research in their life history, management, and population characteristics over recent decades. In a study conducted on channel catfish recruitment in Thunderbird Reservoir, Oklahoma, researchers found that recruitment was negatively associated with total annual water hardness, hypothesizing that larval fish survival decreased when water hardness was $\geq$ 170 mg/L. To test this hypothesis, we investigated the effects of water hardness on channel catfish egg hatch rates to determine if total water hardness impacts the survivability of larva. Fertilized eggs were obtained from the Holdenville State Fish Hatchery, Oklahoma and transferred to the Oklahoma Fishery Research Laboratory. Eggs were divided and placed in tanks of seven water hardness levels (78 [control], 100, 200, 300, 500, 1000, 3000 mg/L $CaCo_3$). Overall survival, hatch rate, and larval abnormalities were recorded and analyzed for differences between hardness levels and fish. Water hardness did not influence survival or growth early in life in our study. However, we did observe that the spawning matrix deteriorated in higher hardness concentrations ($\geq$ 500 mg/L). Future studies should investigate the effects of water hardness on channel catfish survival post yolk-sac abortion to determine if mortality increases later in life and determine if water quality optima vary between catfish populations at smaller spatial extents. Additionally, future work examining the effects of varying water chemistry levels on egg/larval fish survival can replicate our methods for experimental design.

Project Name or Description: Population Dynamics of lotic Blue Catfish and Flathead Catfish in Oklahoma

Contact Information:

Name: Anthony Rodger

Coauthors: Trevor Starks

Email: anthony.rodger@odwc.ok.gov

Phone: 918-260-3231

Objective: Establish a baseline contemporary dataset to monitor trends in dynamic rate functions, generate statewide standards for growth and size structure to facilitate population comparisons, and evaluate harvest regulations under an adaptive management framework.

Current Status: Ongoing

Abbreviated Abstract: Surveys of Oklahoma angler preferences have revealed that Blue Catfish *Ictalurus furcatus* and Flathead Catfish *Pylodictis olivaris* are the most sought-after species by anglers in rivers and streams. Therefore, catfish represent an important natural stream resource warranting management in Oklahoma. Despite their popularity, catfish population management has received very little attention in lotic Oklahoma systems. Consequently, lotic catfish population dynamics data are almost non-existent. Beginning in 2016, the Oklahoma Department of Wildlife Conservation Streams Program instituted a catfish monitoring effort for Blue Catfish and Flathead Catfish. In May of 2022, the Kiamichi River was resurveyed to augment catfish sample sizes collected in 2018. Three additional surveys were conducted for Blue Catfish and Flathead Catfish simultaneously, while an additional six surveys strictly targeted Flathead Catfish. We saw a 149% increase in our overall Blue Catfish sample

size, including a 251% increase in individuals greater than or equal to stock size. Relative abundance estimates remained relatively constant; however, we saw a 26% decrease in the relative standard error around this estimate. Flathead Catfish sample sizes increased by 290% overall with a 347% increase in individuals greater than or equal to stock size. Similar to Blue Catfish, Flathead Catfish relative abundance estimates remained constant, but there was a 53% decrease in the relative standard error. Currently, the ODWC Stream Program has sampled seven rivers since 2016 with cumulative sample sizes of 1,542 Blue Catfish and 763 Flathead Catfish. Max size, max age, fecundity, sex ratios, catch-per-unit effort, proportional size distributions, growth rates, and annual mortality rates are being estimated to inform management decisions for lotic catfish populations. In the future we plan on adding additional rivers to this statewide dataset and supplementing sampling sizes in rivers where necessary.

Project Name or Description: Development of eDNA markers for Flathead Catfish

Contact Information:

Name: Jim Long

Coauthors: Thomas Hafen, Randy Stewart, Tommy Franklin, Dean Hendrickson

Email: longjm@okstate.edu

Phone: 405-744-6342

Objective: develop eDNA marker for identifying locations inhabited by Flathead Catfish

Current Status: completed

Abbreviated Abstract: Flathead Catfish have been stocked widely outside their native range. While undertaking a study on native Yaqui Catfish in Mexico, we worked on creating an eDNA marker for non-native Flathead Catfish where unconfirmed reports of their presence have been known. Mitochondrial DNA markers were developed by the US Forest Service National Genomics Center for Wildlife and Fish Conservation and tested with water samples taken in conjunction with electrofishing performed at Lake McMurtry, Oklahoma. At all sites where Flathead Catfish were captured, water samples were positive for the eDNA marker. No eDNA from Flathead Catfish was found in water samples from the Yaqui River basin, Mexico. Publication of the markers are in the planning stage.

South Carolina

Project Name or Description: Santee Cooper Reservoir Blue Catfish Monitoring

Contact Information:

Name: Levi Kaczka

Coauthors: **Zach Dailey**

Email: KaczkaL@dnr.sc.gov

Phone: 843-259-3017

Objective: Monitor the population status of Blue Catfish in Santee Cooper Reservoir

Current Status: Project is a yearly survey, first began in the winter of 1984-85, with plans to continue indefinitely

Abbreviated Abstract:

The Santee Cooper Blue Catfish population survey first began in the winter months (December-February) of 1984-85 utilizing floating and sinking experimental gill nets. Lakes Marion and Moultrie, collectively known as Santee Cooper Reservoir, are sampled monthly during the study time frame with gill nets being deployed at four sites per lake (24 net nights/year). With few exceptions, sampling locations and effort has remained consistent year-to-year, offering a nearly 40-year data set. Early years of sampling revealed a population that was dominated by relatively high numbers of young, small fish (<500mm). This trend remained consistent throughout the 1990s, with catch rate declines starting to show in the early 2000s. Regulations were introduced in the mid-2000s to spread the harvest of large BCF across more user-groups by creating a "one over 36" " daily creel. This resulted in an immediate increase in the proportion of large BCF in the dataset, though an overall decline in catch rates continued. In 2013, regulations to set a daily creel at 25 fish/day, with the allowance of two fish > 32" was adopted and remain in place currently. The apparent effect of these regulations has been to retain relatively high numbers of large BCF in the system while also boosting numbers overall.

Although current relative abundance does not match that of the 1990s, the size structure of that population was not desirable among the angling community. Current regulations seem to be producing a BCF fishery that is generally accepted as healthy and desirable. One point to note, though, is that the introduction of a 25 fish daily creel saw the commercial BCF community largely disappear from the system. Although guided fishing trips targeting BCF are widespread year-round on Santee Cooper Reservoir, anecdotal evidence suggests that total harvest of recent years is likely to pale in comparison to total harvest in years where commercial fishing was more prominent. Additionally, there seems to be a burgeoning trend among both BCF guides and recreational anglers to employ catch-and-release fishing. These anecdotes may be evidenced by recent years of declining condition among the sampled BCF population. Continued monitoring of this population may reveal whether increased harvest is needed to maintain the fishery, which is known for both its solid numbers and trophy-sized fish.

Tennessee

Name of Representative to Technical Committee: Eric Ganus

Nothing to report / No future projects planned

Texas

Name of Representative to Technical Committee: John Tibbs

Project Name or Description: Revised Catfish Regulations in Texas

Contact Information:

Name: John Tibbs

Coauthors: Numerous (TPWD Catfish Committee)

Email: John.Tibbs@tpwd.texas.gov

Phone: 254-666-5190

Objective: Evaluate and revise Texas' catfish regulations to better accommodate the range of biological and sociological issues associated with catfish fisheries statewide

Current Status: Complete. New regulations enacted September 1, 2021.

Abbreviated Abstract: Many of Texas' existing catfish regulations are outdated, redundant, or are not functioning as intended (either biologically or sociologically). Thus, under direction of the division chief, the Texas Parks and Wildlife formed a committee to identify a new suite of regulations that better achieve TPWD fishery management goals. Based on the most recent statewide catfish angler survey, there are five primary types of catfish anglers to which management goals should focus: generalists, high catch rates, high harvest rates, high harvest of preferred-size catfish, and trophy angling. After extensive evaluation and analysis of Texas' existing catfish data, the TPWD has proposed a new suite of regulations for the entire state. Anglers voiced widespread support and that continued after implementation of the new regulations.

New regulations

1) **Statewide:** Channel, blue, their hybrids & subspecies. No minimum length limit; daily bag limit = 25 fish in any combination. Of the 25-fish bag, no more than 10 can be 20 inches or longer.

2) Channel, blue, their hybrids & subspecies. Minimum length limit: 14 inches. Daily Bag = 15 in any combination.

3) Channel, blue, their hybrids & subspecies No minimum length limit; daily bag limit = 25 fish in any combination. Of the 25-fish bag, no more than five can be 20 inches or longer, and no more than one of those can be 30 inches or longer.

4) **Proposed for Texoma:** For Blue and Channel Catfish, no MLL and daily bag = 15. Only one Blue Catfish 30" or greater by be retained each day. For Flathead Catfish, no MLL and daily bag = 5 (Texoma and the Red River below Texoma).

Retained regulations (one interjurisdictional, one trophy)

5) For Blue and Channel Catfish, no MLL and daily bag and possession limit = 50 in any combination of which no more than 5 Blue or Channel Catfish 30" or greater may be retained. (Toledo Bend, Caddo).

6) For Blue and Channel Catfish, no MLL and daily bag limit = 25. In the 25-fish bag, no more than 7 fish 20" or greater may be retained, and no more than 2 of those fish may be 30" or more in length. (Tawakoni).

Project Name or Description: Relative Catchability of Channel Catfish and Blue x Channel Hybrid Catfish by Anglers in Put-And-Take Urban Fisheries

Contact Information:

Name: Thomas Hungerford

Coauthors: Kristopher A. Bodine, Randy Myers, John Tibbs, David Prangnell, Dan Daugherty

Email: Thomas.Hungerford@tpwd.texas.gov

Phone: 817-732-0761

Objective: 1) Compare post-stocking (i.e., 1 to 14 days) catchability of channel catfish and blue catfish x channel catfish hybrids via angling.

Current Status: Complete. Manuscript published in Catfish 2020

Abbreviated Abstract: Texas' Neighborhood Fishin' Program (NFP) provides close-to-home angling opportunities within 10 major metropolitan areas in efforts to increase angling participation among urban constituents. Waterbodies (0.4 to 2.4 ha) are typically stocked with harvestable (≈ 305-mm total length) Channel Catfish *Ictulurus punctatus* (CCF) to provided high-catch, successful fishing experiences. However, to reduce program cost, fish producers have been increasingly rearing and stocking lower-maintenance, faster-growing Channel Catfish x Blue Catfish *I. furcatus* hybrids. Although recent research in put-grow-and-take fisheries suggested no differences in catchability, anglers in put-and-take fisheries have reported lower catch rates of hybrids. Thus, we evaluated relative catchability between the two species by stocking 50% CCF and 50% hybrids in four NFP waterbodies on nine occasions during 2018. Channel Catfish and hybrids in each stocking were uniquely marked and the percent of each species harvested was measured during five systematic creel surveys across the two-week period immediately following each stocking. We observed significantly more CCF (about five times more CCF) in the first creel conducted following each stocking, but no differences in harvest between species were

observed in any subsequent creel events during the two-week period. However, harvest of CCF declined precipitously across the two-week creel period, and when testing for interaction, CCF harvest during the first creel following stockings was significantly higher than harvest of either species during the final two creels. Our results suggest that CCF may be more readily accessible to anglers immediately following stocking and may also be more catchable than hybrids within 24 h of stocking. Choice of which species to stock should be dependent on relevant fishery objectives. Although CCF will likely produce higher catch rates, stocking a mixture of the two species may provide a longer-term fishery that still produces catch rates high enough to maintain or enhance satisfaction overall.

Project Name or Description: Blue and channel catfish growth, mortality, and size specific exploitation rates in Texas reservoirs.

Contact Information:

Name: Lynn Wright

Coauthors: Michael Homer, Greg Binion, Evan Cartabiano

Email: lynn.wright@tpwd.texas.gov

Phone: 325-651-5556

Objective: 1) Estimate instantaneous mortality and growth rates for Blue and Channel Catfish populations, 2) Estimate size specific exploitation on reservoirs with available catfish harvest data, 3) Estimate length and age at maturity for Blue Catfish and Channel Catfish, 4) Estimate size selectivity of TPWD experimental gill nets for Blue Catfish and Channel Catfish

Current Status: Fieldwork underway.

Abbreviated Abstract: As part of the work done by the TPWD catfish regulation committee, it has been identified that we lack estimates on Blue and Channel Catfish dynamic rate functions in Texas, specifically growth and mortality estimates. This project will provide a significant number of needed growth and mortality estimates and help fill a vital data gap, which would allow us to make more informed decisions regarding appropriate catfish regulations. Additionally, size-specific exploitation can be indirectly estimated when creel data is paired with other population level data. Understanding how or if catfish exploitation changes by length would be vitally important when developing length-based harvest regulations. The current suite of scientific literature has a wide range of estimates for length and age at maturity for catfish, with no Texas specific estimates available. Understanding age and size at sexual maturity would be valuable in the consideration of setting length limits and could help inform population modelling. Finally, evaluating size bias in our experimental gill nets would benefit biologist statewide by providing a size-bias correction that can be used to improve the quality of our data.

A total of 7 reservoirs have been sampled as of December 31, 2022, comprising 248 gill net-nights, with 2,627 blues and 648 channels collected. Of the 1,794 otoliths collected, 1,127 have been aged. Six more reservoirs are slated for sampling in the spring of 2023.

Project Name or Description: Customer segmentation of catfish anglers using a survey of state preferences to guide management decisions and ensure optimal customer service

Contact Information:

Name: J. Warren Schlechte

Coauthors: John B. Taylor, David L. Buckmeier

Email: Warren.Schlechte@tpwd.texas.gov

Phone: 830-866-3356 x 214

Objective: To marry customer segmentation with stated preferences of catfish anglers to understand how to manage and market at a localized scale.

Current Status: Complete. Manuscript published in Catfish 2020.

Abbreviated Abstract: To assist the Texas Parks and Wildlife Department in developing a statewide catfish management plan, Mississippi State University surveyed 1,078 freshwater catfish anglers to examine their catch-related attitudes and trip preferences using a stated choice experiment. Initial analyses assigned anglers to five groups based on their catch-related attitudes scores. We then used ESRI's Business Analyst tool to perform customer segmentations for these clusters. Tapestries for the different clusters were analyzed using various multidimensional techniques to aid us in understanding similarities and differences among the clusters. We were able to document similarities and differences between the various groups of catfish anglers. Using this information, we were then able to produce maps that show where these various clusters reside. Understanding how our customers differ will allow us to market fishing opportunities in various parts of the state more effectively.

Project Name or Description: Determining the Limiting Factor for Establishing a Channel Catfish Fishery at Lake Raven, Texas

Contact Information:

Name: Carl Vignali

Coauthors: n/a

Email: Carl.Vignali@tpwd.texas.gov

Phone: 979-272-1430

Objective: Determine if barriers to natural reproduction or recruitment limit the natural Channel Catfish fishery at Lake Rave, Tx.

Current Status: Ongoing. Sampling continuing.

Abbreviated Abstract: Lake Raven in Huntsville State Park is an aging reservoir with high levels of siltation and little habitat appropriate for Channel Catfish spawning. Additionally, Lake Raven has been utilized for experimental largemouth Bass selective breeding and high-intensity stocking programs and hosts a robust Largemouth Bass population. Natural Channel Catfish recruitment has never been observed in Lake Raven and it is unclear if the lack of recruitment is due to a lack of natural reproduction or excessive predation on young fish. Seventy-eight spawning barrels were installed in the spring of 2018. Reproduction was observed in the barrels in 2019. Observation of reproduction activity will continue for several more years and annual hoop-net surveys will be used to determine recruitment to the gear.

Project Name or Description: Evaluation of Ghost-fishing of Abandoned Trotlines in a Texas Reservoir

Contact Information:

Name: Dusty McDonald

Coauthors: Greg Binion, Warren Schlechte, Donovan Patterson, Dan Ashe,

Email: dusty.mcdonald@tpwd.texas.gov

Phone: 361-547-9712

Objectives: 1) Evaluate Channel Catfish / hook interaction with an abandoned trotline simulation (controlled pond study), 2) determine the fresh cut-bait retention and total catch within a 24-hour period, comparisons between set times (morning/evening) and season (winter, summer; field study), and 3) determine the impact of multiple trotlines on the fishery and the integrity of the trotlines throughout time with a seasonal component (field study).

Current Status: Completed and published in 2022 NAJFM 42: 839-848.

Abbreviated Abstract: Reports of ghost-fishing by abandoned freshwater trotlines exist within the media. These reports suggest abandoned trotlines can be a hazard to human waterbody users, and indiscriminately kill or injure aquatic life. Previous experimental work evaluating ghost-fishing has been focused on gears used in the marine environments. In contrast, freshwater trotlines, have never been evaluated. Numerous factors (e.g., hook style, timing of set, season of set) influence the potential for ghost-fishing. We designed a multi-stage study to examine these elements: 1) we used an abandoned trotline simulation within hatchery ponds to determine whether hook style, bait presence, and season had any effect on catch rates, retention and mortality of Channel Catfish 2) we used a field study to

demonstrate what was caught and killed, and how the timing of sets (morning or evening) and season (winter or summer) may affect catch rates over a 24-h period, and 3) we examined the long-term resiliency of trotlines in a freshwater reservoir exposed to winter and summer seasons. We observed evidence of ghost-fishing in both the hatchery ponds and within the field studies. We found that unbaited hooks caught 12 species of fish, turtles and birds. Our long-term study is ongoing, but we have determined that the cooler water temperatures of the winter tended to result in higher catch rates and longer retention rates of aquatic organisms compared to summer-set trotlines. In our simulated abandoned trotline study, both baited and unbaited hooks caught fish ($\overline{x}_{baited}$ = 18.4, $\overline{x}_{unbaited}$ = 15.3; P=0.33). This validates the previous reports of ghost-fishing occurring with abandoned trotlines. Our field study determined that the timing and the season of the trotline set had no significant effect (P = 0.1306; P= 0.2746 respectively) with overall field catch rates. The resiliency of trotlines appears to decrease rapidly after being set and differed by season; Winter trotlines lost 50% of hooks at 78.3 days compared to 62.3 days for summer-set trotlines. We give some baseline data on how efficient abandoned freshwater trotlines are at collecting aquatic organisms and make recommendations on how to manage trotline fisheries with this gear.

Project Name or Description: Using Creel Data to Evaluate Blue and Channel Catfish Aggregate Harvest Regulations for Texas Reservoirs.

Contact Information:

Name: Mitch Nisbet

Coauthors: Randy Myers, Greg Binion, Dusty McDonald

Email: mitch.nisbet@tpwd.texas.gov

Phone: 210-688-9460

Objectives: Use existing creel data to predict the impact of alternative length limits and daily bag and use this information to identify appropriate blue and channel catfish regulations.

Current Status: Completed. Manuscript published in Catfish 2020.

Abbreviated Abstract: The Texas Parks and Wildlife Department's strategic management plan for catfishes (Ictaluridae) called for the development of alternative harvest regulation for Blue Catfish (*Ictalurus furcatus*) and Channel Catfish (*I. punctatus*). Angler harvest of these species in most Texas reservoirs has been regulated using a 305-mm minimum length limit (MLL) and a 25-fish aggregate daily bag limit (DBL) since 1995. Using existing creel data for 86 Texas reservoirs managed under the statewide harvest regulation, collected from 2003 to 2018, we examined Blue Catfish and Channel Catfish harvest-size structure and composition, percent release of legally-harvestable size fish, and harvest density (number and biomass). Additionally, for reservoirs having long-term creel data, we evaluated change over time in percent release of legally-harvestable size fish and harvest-size structure, and

estimated the impact of alternative harvest regulations using a theoretical harvest reduction (THR) model. Channel Catfish was the preponderate species harvested (>75% of harvest) in 63% of the reservoirs. Harvest-size structures of Blue Catfish and Channel Catfish differed, but the difference in percent harvest of fish <406 mm was negligible (52% and 48%, respectively). Percent release of legally-harvestable size fish (≥305 mm) was low at most reservoirs (median = 13%). Total catfish harvest-per-hectare-per-quarter (HHQ) ranged widely (0.0-11.3), but was <1.0 at 58% of reservoirs. Harvest-size structure truncated over time coincident with a high harvest level (HHQ >3.0) at two of four long-term data reservoirs suggesting growth overfishing. The THR model revealed that increases in MLL resulted in variable harvest reductions among reservoirs and removal of the 305-mm MLL could increase harvest 6-39%. Additionally, we found that length-graduated DBLs would have a negligible impact on reducing harvest of larger fish. We suggest that MLLs are not necessary for most Texas catfish fisheries and that a 356-mm MLL may be appropriate for high-harvest fisheries.

Project Name or Description: Comparison of Catfish Harvest Between Anglers Using Active and Passive Angling Gears in a Texas Reservoir

Contact Information:

Name: Greg Binion

Email: Greg.binion@tpwd.texas.gov

Phone: 361-547-9712

Objectives: 1) Compare and assess differences in harvest and harvest efficiency between anglers using active and passive angling gears. 2) Evaluate differences in harvest size composition among passive and active gears. 3) Assess differences in various creel dynamics and angler behaviors between anglers using these gear types. Examples include expenditures, time of creel interception, trip duration, and percent of catfish anglers fishing during nighttime hours.

Current Status: Ongoing, manuscript in development.

Abbreviated Abstract: We used creel data to evaluate differences in catfish harvest composition, harvest size structure, angling success, and harvest efficiency between anglers using active (rod and reel) and passive (jug line, trot line) angling gear types. Whereas Blue Catfish *Ictalurus furcatus* were the predominant catfish species harvested for both gear types (range: 82.8 – 95.9%), Channel Catfish *Ictalurus punctatus* represented a substantially higher proportion of the rod/reel harvest composition (17.1%) compared to the passive gear composition (3.0%). Flathead Catfish *Pylodictis olivaris* were harvested in low numbers, representing 0.04% (rod and reel) and 1.1% (passive gears) of total catfish harvest, respectively. The mean total length of Blue and Channel Catfish harvested by rod and reel were significantly less than the mean total length harvested with passive gears. Kolmogorov-Smirnov Test of homogeneity indicated greater selectivity for larger individuals by passive gear. Angler success was similar across gear types when comparing mean harvest on a per-party and per-individual basis. However, harvest efficiency, measured by harvest per-unit effort (HPUE) significantly differed between

gears and was greatest for passive angling gear (active HPUE = 0.91/hour, SD = 1.3, N = 938; passive HPUE = 2.12/hour, SD = 2.4, N = 298). Our results suggest that collection of passive gear creel data be considered an important data need to inform management decisions (i.e., regulation change, seasonal closure) where passive fishing gears are heavily utilized or potentially represent a substantial portion of catfish effort and harvest. Moreover, the results suggest passive gears may be useful for the collection of larger individuals to supplement alternative catfish sampling methods or to help achieve specific fisheries management sampling objectives.

Virginia

Name of Representative to Technical Committee: Margaret Whitmore

Project Name or Description: James River Blue Catfish Movement Ecology

Contact Information:

Name: Margi Whitmore
Coauthors: Various
Email: margaret.whitmore@dwr.virginia.gov
Phone: (757) 406-2168

Objective: 1) Identify spatiotemporal patterns of Blue Catfish movement and distribution and drivers of those patterns 2) Identify spawning, overwintering, and summer aggregation areas 3) Evaluate transboundary movements and spillover from commercially unexploited areas 4) Evaluate behavioral response to low frequency electrofishing

Current Status: Ongoing

Abbreviated Abstract:

Non-native Blue Catfish (*Ictalurus furcatus*) were intentionally introduced into the James River in the 1970's to create a recreational fishery. The success of these efforts has led to increasing abundance and spatial distribution of Blue Catfish within the James River watershed and has prompted concern over the impacts of Blue Catfish on native species. The James River supports an active recreational fishery and a commercial low-frequency electrofishing (LFEF) fishery, with the commercial zone limited to a 100-rkm section of the tidal mainstem. The purpose of this project is to identify movement and distribution patterns and assess Blue Catfish response to LFEF in an effort to inform guidance, management decisions, and angler outreach.

In October 2021, 40 Blue Catfish ranging in size from 319 to 1134 mm total length were tagged with V13 and V16 acoustic tags, with a tag life of three and 10 years, respectively. A second cohort of 40 fish were expected to be tagged in October 2022 but, due to adverse weather conditions and low gear efficiency, only ten fish were tagged. The remaining 30 fish will be tagged in spring 2023, when water temperatures are favorable. This project relies on the existing passive receiver array in the James River in addition to receivers newly deployed in six major tributaries to assess movement into and out of the mainstem.

Active tracking methods are being used to identify overwintering areas, spawning habitat, and response to LFEF.

West Virginia

Name of Representative to Technical Committee: Stephen Floyd

Project Name or Description: Ohio River Catfish Population Assessment

Contact Information:

Name: Katherine Zipfel
Co-Authors: Stephen Floyd
Email: Katherine.J.Zipfel@wv.gov
Phone: 304.420.4550

Objective: Assessment of Catfish Population Characteristics in Various Ohio River Pools

Current Status: Ongoing

Abbreviated abstract: Beginning in 2018, our annual catfish population assessment protocol was altered to coincide with KDFWR's pool-wide, multi-gear sampling approach. Previous lock and dam tailwater low frequency boat electrofishing surveys focused primarily on Flathead Catfish populations, and with the growing popularity of Blue Catfish it was necessary to move to a multi-gear approach to allow for the assessment of Blue, Channel and Flathead catfishes.

Shore-line low-frequency pulsed DC boat-mounted electrofishing surveys were conducted for Flathead Catfish in the Racine and Belleville pools of the Ohio River from May to June 2022. Low-frequency electrofishing surveys (DC output ~200V, 2 amps, 15 pulse/second) were conducted at five sites throughout the two pools, focusing on areas with outside bends and/or rocky shorelines. Surveys consisted of five 15-min transects at each location with an associated chase boat. Hoop nets (15; baited with Zote soap) were set at three locations (upper, middle, and lower sections) within the Racine pool, strategically positioned in outside bends and river margins to sample Channel Catfish. Hoop nets were fished for three consecutive nights. All catfish collected were identified to species and measured for total length (mm). A sub-sample of both Flathead and Channel catfish were kept for an age and growth analyses.

Flathead Catfish CPUE via boat electrofishing surveys ranged from 78.2 ± 18.1fish/hr in the Racine Pool to 104.6 ± 18.5 fish/hr in the Belleville Pool (Table 1). Catch rates for Channel Catfish (3.1 ± 1.5 fish/net night) in hoop nets was notably improved from 2021 (0.6 ± 0.32). Hoop nets continued to capture memorable and trophy Flathead Catfish (n = 14). Age and growth analyses are ongoing.

Table 1. Summary of data collected from hoop net (HONT) and boat electrofishing (BTEF) surveys targeting catfish in the Racine and Belleville pools of the Ohio River in 2022. CPUE is reported as fish/hr. (BTEF) or fish/net night (HONT).

Belleville						
Gear Type	**Effort**	**Species**	**CPUE**	**Size Range**	**N**	**PSD**
BTEF	5.5 Hours (20 transects)	Channel	-	-	-	-
		Flathead	104.6 (18.5)	78-1078	523	51
		Blue	-	330-841	3	-
Racine						
Gear Type	**Effort**	**Species**	**CPUE**	**Size Range**	**N**	**PSD**
HONT	135 Net Nights	Channel	3.1 (1.5)	220-892	422	46
		Flathead	0.3 (0.2)	249-1160	45	84
		Blue	-	266-283	2	-
BTEF	5 Hours (22 transects)	Channel	-	-	-	-
		Flathead	78.2 (18.1)	80-1162	430	46
		Blue	-	405-967	13	-

Addendum: Blue Catfish Regulation Change

Beginning in 2023, new regulations for Blue Catfish will be going into effect. The new regulation allows for an angler to keep four fish per day (>25”), with one fish over 35”. The previous regulation permitted anglers to keep two fish per day, with a minimum length of 24”. Based on YPR modelling of a four-year study from the R.C. Byrd pool of the Ohio River, this regulation performed best among various other proposed regulation changes. Harvest rates are hypothesized to be extremely low in the navigable rivers of West Virginia, namely because of consumption advisories.