



2023 State Reports

Alabama

Name of Representative: Chris McKee

Arkansas

Name of Representative: Sean Lusk

Evaluating exploitation on Arkansas' premier Striped Bass fisheries

AGFC personnel used gill nets (300' length, 4" mesh, and a few 2" nets) to tag 657 legal-sized striped bass on three reservoirs (Beaver, n = 252, Norfolk; n = 201, Ouachita; n = 204) between February and April 2022. All fish received 2 plastic tipped dart tags and each fish offered a \$100 return incentive. As of 1/30/2023, 87 tagged striped bass have been reported across the three reservoirs (Beaver; n = 47, Norfolk; n = 26, Ouachita; n = 14). Three tagged fish (one on each lake) were reported as being found dead. Harvest rates on Beaver, Norfolk, and Ouachita lakes have been 83%, 62%, and 57%, respectively. Of the 87 returned striped bass, 6 have been returned with one tag.

We also conducted a short term holding trial to estimate acute handling and tagging mortality of tagged striped bass. Ten tagged (mean TL = 750 mm) and ten untagged (mean TL = 788 mm) striped bass were released into the 28 acre Beaver Lake nursery pond and recovered after 3 full days at large. Water temperature ranged between 44 – 47 degrees during the trial. All tagged and untagged fish survived the tagging trial. We plan to conduct an additional tag mortality trial in Spring 2023 at the Beaver Lake nursery pond when water temperatures reach 58 – 64 degrees F because of differences in mean water temperatures at the time of tagging between reservoirs, and the effect it may have on tagging mortality.

A status update on Striped Bass angler diary programs in Arkansas

Beginning in 2018, AGFC biologists initiated an angler diary program to evaluate the Striped Bass population in Lake Ouachita, Arkansas. During 2021 this diary program was expanded to Beaver Lake and ultimately to Norfolk during 2022. This program has been quite successful in assisting with monitoring trends in catch rate, size structure, and mortality for the Lake Ouachita Striped Bass population. Over the next several years we are optimistic that data collected on Beaver and Norfolk will also be useful in monitoring trends. The single biggest obstacle facing these angler diary programs is participation. On Ouachita, Beaver and Norfolk anglers have expressed a degree of reluctance to participation.

Developing a standard operating procedure for evaluating reservoir forage using Hydroacoustics

The Arkansas game and Fish Commission has contracted researchers at Oklahoma State University to develop a protocol for evaluating reservoir forage using Hydroacoustics. Phase one of this project is focused on proper gear settings/configuration as well as sampling design. The second phase of this project will be directed towards efficiently processing collected hydroacoustics data. The following is a synopsis of the 2022 field season as provided by Oklahoma State:

Preliminary night sampling indicate vertically migrating Chaoborus influence volume target estimates. Vertically migrating Chaoborus created large amounts of acoustic backscatter, making it difficult to gain accurate fish abundance estimates from these data. During the 2022 field season, we evaluated the use of wideband echosounding (to enhance target range resolution and classification) and daytime sampling (to avoid Chaoborus backscatter) as an alternative to traditional nighttime sampling, with particular attention to evidence of boat avoidance and acoustic shadowing (attenuation of acoustic signal) when dense schools were present (i.e., concerns that have led to past recommendations for nighttime sampling). We sampled during day and night with narrowband and wideband operation using a 200kHz nominal frequency transducer during the months of July - October 2022 at Beaver and DeGray Lakes, and an October 2022 sample at Lake Carl Blackwell. During September and October samples, a forward facing-facing multibeam echosounder was also used to evaluate boat avoidance. Bottom backscatter below schools versus bottom backscatter before/after schools was used to evaluate the degree of shadowing caused by fish schools. Data will be analyzed to assess the advantages and disadvantages of narrowband/wideband and day/night sampling to determine whether daytime echosounding represents a robust solution for monitoring prey-fish stocks in reservoirs. Our results may indicate daytime samples provides a solution to allow hydroacoustics to monitor prey-fish stocks in reservoirs throughout the country, even in the presence of dense Chaoborus populations.

Florida

Name of Representative: Chris Paxton

Georgia

Name of Representative: Hunter Roop

Moronid Production (2022; Region 6):

During 2022, Georgia DNR produced 5.8 million striped bass fry and 4.7 million reciprocal hybrid striped bass fry for stocking hatchery ponds across the state. Production of striped bass fry

averaged 42,378 fry per pound of female which is nearly a record high. Additionally, we only required 8 female striped bass brood fish from Region 1 to meet our annual production needs. Reciprocal hybrid striped bass production averaged 37,821 fry per female white bass. A total of 1.78 million striped bass, 1.05 million hybrid striped bass, and 650,000 white bass were stocked by DNR into 29 reservoirs and 3 rivers across the state throughout 2022.

Gulf STB Management (Region 5):

In 2021, Gulf Strain STB management was complicated due to high water levels and poor visibility. Broodstock collections and surveys of coolwater springs were halted. No gulf strain STB broods were sent to Welaka and no Ga reservoirs received Gulf strain STB. 2022 was a much better year for Gulf striped bass. Region 5 sent 10 nice broods for spawning, to facilities at FWS and FWC this spring. CPUE for spring sampling was up for larger fish. This was also the case in summer refuge inventories. Overall, fish condition looked very good in the thermal refuges this summer. It appears, larger fish that were affected by severe droughts are finally making a comeback. Lake Seminole was stocked with approximately 164,000 fingerlings and Walter F. George with approximately 78,000. Several YOY striped bass were found during YOY *Morone* sampling on Walter F. George indicating a successful stocking. The Gulf striped bass technical committee has still not finalized the next five-year plan. Hopefully, next year. All in all, it was a good year for Gulf striped bass.

Reservoir Management (Region 2):

Striped bass management in Region 2 primarily consisted of routine fingerling stockings and fish population surveys. On Lanier, fall gillnet surveys revealed a strong age 1.5 year class (2021) that was initially detected in 2021 as YOY fish. This year class accounted for 57% of the striped bass surveyed in 2021 and 31% of striped bass survey in 2022. Lanier also contains a significant fishery for quality and preferred sized fish, with many fish in the 8-12 lb range captured via non-standardized boat electrofishing this spring, and caught again this fall in the 10 – 15 lb range. This summer, fishing was tough for most anglers as the stripers were occupying the hypolimnion for most of the summer and were feeding on abundant, allegedly historically large schools of blueback herring and threadfin shad. Many anglers attributed their relatively low catch rates for stripers to the abundance of forage in the reservoir. Single, dead threadfin shad were observed floating up from below the surface during our water quality monitoring surveys. These threadfin were injured and many had “bite” marks on their bodies, indicating they were stunned or freshly regurgitated and supporting the suspicions of many anglers. In the fall, a strong surface feeding patten originated in over the main channels and in the backs of highly productive coves (e.g., Flat Creek). Anglers had to offer something different to get the fish to bite, and freeling 3” shiners did the trick. Anglers appear satisfied with the current “quality over quantity” theme of the fishery, as they have been anticipating larger fish recruiting to the fishery since a major reset in the size structure of the population in 2017.

Lake Hartwell is a 56,000 acre reservoir that currently receives hybrid striped bass stocking efforts from both the GADNR, who stocks reciprocal crosses, and the SCDNR, who stocks original crosses. Because both crosses already occur in the same body of water, we believe that

comparing the two (original/Sunshine and reciprocal/Palmetto) could provide a unique opportunity in understanding whether substantial differences in growth rates (or other metrics) exist between them. During 2023 fall gill netting we plan to pull sagittal otoliths and a fin clip from each individual sampled, which will then be used for age and growth work as well as genetic testing.

Kentucky

Name of Representative: Marcy Anderson

General Statewide Morone Information

During 2022, the Kentucky Department of Fish and Wildlife Resources (KDFWR) Morone Committee has been revising the draft Morone management plan and working on associated documents, including historic stocking tables and standardized sampling protocols.

Broodstock Collection Information

In spring of 2022, KDFWR staff collected striped bass broodstock from Lake Cumberland and the Lake Cumberland tailwater to attempt spawning within our state-run facilities. Kentucky currently gets striped bass from Tennessee Wildlife Resources Agency and other surrounding states. The current population on Lake Cumberland is slightly skewed towards smaller, immature fish due to poor year classes in 2018 and 2019. Attempts to collect fish on the lake yielded no females. Female striped bass were collected from the tailwater, but with the constant cold water temperatures, eggs were not close to being viable. Further attempts to collect broodstock in 2023 are being discussed.

Lake Cumberland Striped Bass Information

On Lake Cumberland (50,250 acres), striped bass stocking regimes have changed. Prior to 2022, striped bass were stocked at 7.0 fish per acre (350,000 total) for 2 years and 10.0 fish per acre (500,000 total) on the third year. Beginning in 2022, fish will be stocked at 10.0 fish per acre each year. Surplus fish were available this year, so 6000,000 striped bass were stock in Lake Cumberland. Although 2022 was an off year for sampling striped bass, anecdotal data collected during walleye sampling indicated that the 2020-2022 year classes are doing well, with some larger, older fish available. Fish were in good condition going into the winter and low numbers of gill parasites were observed in the fish. Standardized fall gill net sampling for striped bass will occur in 2023 on Lake Cumberland.

Hybrid Striped Bass Stocking Project

The stocking evaluation project to compare original and reciprocal hybrid stockings was completed, and the fisheries bulletin (No. 124) was published in June 2022. The project abstract is as follows, and the final report is available via email if anyone is interested.

Evaluation of Stocking Original and Reciprocal Cross Hybrid Striped Bass in Three Kentucky Impoundments-Abstract

Over the past four decades both original and reciprocal crosses of hybrid striped bass have been stocked in Kentucky reservoirs. Although both crosses of hybrid striped bass have been stocked, there is little known on the differences in growth, recruitment or maximum age and size of original versus reciprocal cross hybrid striped bass in Kentucky reservoirs. This study wasn't set up to examine maximum age and size, but rather to compare growth, condition and relative abundance of the two crosses of hybrid striped bass from age-1 to age-3.

Herrington Lake, Taylorsville Lake and Rough River Lake were selected as the study impoundments with 10 fingerlings/acre of each of the reciprocal and original cross hybrid striped bass stocked annually in June from 2015-17. Original cross were marked with oxytetracycline (OTC), whereas reciprocal cross were unmarked. Short-term post stocking survival was examined and was highly variable between crosses and exceptionally high some years leading to a tempering protocol being developed for stocking Morones. Fall gill netting was used from 2016-2020 to sample hybrid striped bass with length and weight data collected on all fish. Otoliths were removed and examined for an OTC mark to determine cross and for age and growth information.

Water quality was monitored at the three study lakes during the summer and early fall where temperature and dissolved oxygen were thought to be limiting factors to hybrid striped bass condition and survivability. A habitat suitability index for hybrid striped bass was utilized to help evaluate water quality data. All three study lakes had poor habitat for hybrid striped bass throughout the entire water column and in all reaches of the lake for part of the year. Water quality likely plays a key role in the success or failure of the hybrid striped bass fishery especially as these reservoirs age and experience eutrophication.

The relative abundance of each cross appears to be variable depending on survival and year class strength with no clear advantage on survivability to either cross when stocked at the same size. Herrington Lake was the only lake where the reciprocal cross was consistently more abundant for age-1 – age-3 fish examined. Potential growth differences between crosses and sex of hybrid striped bass were analyzed with one-factor analysis of variance (ANOVA). When summarizing comparisons of growth potential at all three lakes the following conclusion can be made. In all comparisons of growth between crosses that were significantly different, the reciprocal cross had a greater mean length at age compared to the original cross. In all comparisons of growth between sexes that were significantly different, females had a greater mean length at age compared to the males. Relative weights varied between crosses but tended to follow a pattern among year classes at all three study lakes. Patterns with relative weight comparisons between the sexes were more sporadic.

If it is desired to maintain hybrid striped bass populations in Kentucky reservoirs it is recommended to continue stocking reciprocal cross at 20 fingerlings/acre. If original cross are thought to reach a larger maximum size, 50% of stocked hybrid striped bass could be stocked with original cross if fry can be procured from other states.

Louisiana

Name of Representative: Jonathan Winslow

Mississippi

Name of Representative: Christian Shirely

North Carolina

Name of Representative: Kelsey Roberts

Research Projects

Project Name: Seasonal movement and summer habitat use of hybrid Striped Bass in a large cooling plant reservoir in North Carolina

Contact Information:

Name: Kelsey Roberts

Co-Authors: Lawrence Dorsey

Email: kelsey.roberts@ncwildlife.org

Phone: 336-290-0052

Objective: To evaluate the seasonal movements and summer habitat use of hybrid Striped Bass in Lake Norman. To use results of this study to better predict hybrid Striped Bass utility in other reservoirs.

Current Status: Field research is complete. Results are being compiled and analysis is expected to begin winter/spring 2023

Project Description: Acoustic telemetry tags that could transmit depth and temperature data along with radio telemetry tags were surgically implanted into 50 fish in May of 2020 and 64 fish in May of 2021. Passive receivers (n = 44) were deployed throughout Lake Norman, a large cooling plant reservoir located near Charlotte, NC in the Piedmont, to detect seasonal fish movement. Monthly attempts to individually locate fish were conducted using boat mounted radio receivers. Active tracking during peak summer months was conducted weekly. If located, dissolved oxygen and temperature at the depth of the fish were recorded. Results from summer 2021 indicate that hybrid Striped Bass in the lower portion of the lake avoid the metalimnion and hypolimnion as predicted during summer months when those zones become anoxic. However, no formal analysis has been conducted.

Project Name: Inland Morone Management Plan and Human Dimensions Survey

Contact Information:

Name: Kelsey Roberts

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Phone: 336-290-0052

Objective: 1) To create a management plan using biological and human dimensions data to inform future management decisions regarding all Morone species, specifically Striped Bass and hybrid Striped Bass, 2) assess angler awareness, use, and satisfaction of current stocked reservoirs in the Morone stocking program, 3) evaluate the motivational factors driving anglers to target Morone species.

Current Status: Meetings to develop the plan are ongoing and began in summer 2022. The human dimensions project proposal was submitted in December 2022. If accepted, the survey planning and execution of the survey will most likely begin in 2023 or 2024.

Project Description: This management plan will serve as a knowledgebase for historic and current Striped Bass and hybrid Striped Bass data, including but not limited to sampling methods, stocking history, unique considerations, and current reservoir physical characteristics. It will also include guidelines to inform stocking decisions for existing and new stocking locations. Results from the human dimensions survey will be used to recommend ways to improve angler satisfaction, use, and awareness of the program and provide baseline information for future human dimension assessments.

Project Name: White Bass Spawning Movements in a Piedmont Reservoir, NC

Contact Information:

Name: Kelsey Roberts

Co-Authors: Seth Mycko

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Phone: 336-290-0052

Objective: 1) To use telemetry to identify spawning habitat and, 2) to evaluate spawning movement patterns in relation to various environmental factors such as water temperature, photoperiod, and river discharge as well as biological factors such as fish sex and river homing.

Current Status: Receivers were removed in August 2022. Data analysis will begin in winter or early spring 2023.

Project Description: White Bass are a popular sportfish during spring spawning migrations and are also used as broodfish to produce hybrid Striped Bass. Their variable spawning behavior and declining populations have made both angling and broodfish collections difficult in recent years. A total of 50 White Bass were implanted with acoustic telemetry tags in spring 2019 and an additional 30 White Bass were tagged in spring 2020. Spawning migrations were tracked in two tributaries of Falls Lake (located in the Piedmont of North Carolina) using an array of passive receivers. Results from this study will allow biologists and anglers to better predict peak spawning conditions improving both angler and broodfish collection success rates across the state. Identifying key habitat used for spawning could also aid in future habitat restoration efforts.

Production

A total of 423,939 hybrid Striped Bass were stocked into 7 reservoirs and a total of 698,869 Striped Bass were stocked into 11 reservoirs in June 2022. The Cape Fear River was stocked with 188,909 Striped Bass. The Neuse River was stocked with 92,345 Phase 1 and 35,560 Phase 2 Striped Bass from the Edenton National Fish Hatchery.

Oklahoma

Name of Representative: Matt Mauck

ODWC Hatchery Section:

- Stocked 620,000 Hybrid Striped Bass fingerlings in 11 Oklahoma reservoirs
- Surplus produced for trade w/ regional states: 5.2 million hybrid striped bass fry, 600K striped bass fry, 1 million striped bass eggs

Research Efforts:

1. ODWC and Oklahoma State University are looking into striped bass movement, habitat utilization, and exploitation within the Arkansas River and associated tailwaters. Below is an abstract provided by Dr. Dan Shoup (Oklahoma State University, Dept of Natural Resource Ecology and Management) and Alex Vaisvil. Results are preliminary and additional modeling is planned to further investigate exploitation.
 - a. Managing mobile sportfish in river-reservoir complexes is challenging because of the spatial scale, complexity, and anthropogenic stressors acting on these populations. Striped Bass in the Robert S. Kerr river-reservoir complex, Oklahoma are naturally reproducing and support a recreational fishery. However, it is unknown when and to what extent Striped Bass use tailwaters of the Robert S. Kerr river-reservoir complex, which are habitats associated with high angler exploitation. We evaluated the influence of physicochemical habitat on Striped Bass movements at the segment scale to estimate the spatiotemporal vulnerability of Striped Bass to angling. Striped Bass were tagged with dual acoustic/radio telemetry tags ($n = 106$), passive integrated transponder (PIT; $n = 3,200$), and reward tags ($n = 650$) to help estimate movement and angler exploitation rates. Movement of 111 individuals from June 2020 to June 2022 was lowest with water temperatures above 23–25°C and periods of time with low discharge. Preliminary estimates indicate an apparent survival of 53% (27%–77%) and an overall capture probability of 0.00001%. Preliminary estimates from the binomial Known-Fate model indicate mean survival rates of 64%. Preliminary annual fishing mortality rate is conservatively estimated to be 18% (not yet adjusted for

angler compliance or tag loss rates). Most of this exploitation occurred when Striped Bass were in tailwater habitats in the summer. Thus, it does not appear that harvest mortality is a significant threat to the population at large, but it is possible growth overfishing effects could be seen late in summer after significant angling on a small portion of the total population occurs in tailwater habitats. These potential effects will be modeled to determine if special harvest regulations in tailwater habitats could be beneficial.

2. ODWC research staff - Efforts to classify natal origins of striped bass in the Arkansas River by utilizing otolith microchemistry. Contact Information: Austin Griffin, Jory Bartnicki, Doug Zentner (405-325-7288)

- a. **Title of Paper/Presentation:** An update on the classification and determination of Striped Bass (*Morone saxatilis*) natal origins in the Arkansas River, Oklahoma.

Abstract: Following 12 months of water sample collection throughout the Oklahoma portion of the Arkansas River, we used a random forest model (RFM) with a CART algorithm to determine if strontium-calcium (Sr:Ca), magnesium-calcium (Mg:Ca), and barium-calcium (Ba:Ca) ratios (mmol/mol) could be used to predict the waterbody a sample was collected from. After assessing the data annually with mixed results, we parsed the data down to the April and May samples to focus on the spawning timeframe. We randomly selected two thirds of the samples from each river/stretch ($n = 4$) to be training data (total $n = 60$) for development of the RFM. We then used the remaining one third of the data (total $n = 30$) to estimate the predictive accuracy of the RFM. Predictive accuracy was estimated to be 96.67%, with the only misclassification being one Fort Gibson sample that was predicted to originate from Webbers Falls. Variable importance estimates from the RFM suggested the Mg:Ca ratio was the most important predictor followed by Sr:Ca and Ba:Ca ratios, respectively. We will continue collecting samples for a total of 36 consecutive months for further classification. Assuming successful water body classification, we will then collect adult striped bass for otolith microchemistry analysis and compare with water body trace element signatures to determine natal origin.

3. ODWC research staff - Contact Information: Austin Griffin, Jory Bartnicki, Doug Zentner (405-325-7288)

- a. **Title of presentation or manuscript:** The Importance of Gape-vulnerability in Mixed-Moronid Fisheries

Abstract: Gape-limitation is a key mechanism controlling the size of prey a predator can consume. A fish's gape is intrinsically linked to its size, which changes through time with growth. Prior work on gape-limitation has revealed competitive relationships among gamefishes and allowed for the estimation of prey availability. High utilization of shad (*Dorosoma* species) by the Moronidae family creates an opportunity to investigate gape limitation theory. Moronids are widely pursued across the United States with five species present in Oklahoma.

The goal of this study was to determine potential competition between Oklahoma moronids using gape-limitation theory and a common forage species (gizzard shad; *Dorosoma cepedianum*). The objectives were to: 1. Develop equations to determine the proportion of gizzard shad vulnerable by size and age to five species of moronids in Oklahoma. 2. Compare vulnerability between similar sized moronids to determine potential competitive advantages. 3. Determine if advantages exist for a particular species when accounting for prey and predator annual growth trajectories. Growth-mediated competition appears to be occurring in moronids, allowing fishes who may not have a competitive advantage at a similar length to reach larger sizes and obtain a larger gape. This allows them to better compete within the conspecifics of their genus. These results suggest growth rates and the resulting size structure of species within a mixed-moronid fishery are important to mediating potential competition. Managers concerned with forage availability for moronids can use gape-based vulnerability to both estimate forage availability and competition between species and gauge how growth mediates these interactions. If forage is hypothesized to be limited and competition appears likely, managers should first estimate diet overlap, prey abundance, and intragenus predation to determine if manipulation of the forage base or moronid population(s) is warranted. If so, we recommend following standardized fisheries methods to determine if the population(s) can be manipulated to meet management objectives.

South Carolina

Name of Representative: Jason Bettinger

Routine Monitoring

South Carolina conducts routine monitoring of Striped Bass and Hybrid Striped Bass (Savannah impoundments only) in select reservoirs annually. The objectives of the sampling are to monitor relative abundance, age structure, relative weight and estimate growth. Sampling is conducted with reservoir-specific standardized gillnetting during fall and winter. Reservoirs surveyed during 2022 included, Lake Murray, Lake Moultrie, Lake Marion, and Lake Wateree in the Santee drainage and Lake Hartwell and J. Strom Thurmond Reservoir in the Savannah drainage. During 2022 boat electrofishing was also used to collect Striped Bass from tributary rivers to Lake Hartwell, J. Strom Thurmond Reservoir and the Santee-Copper Lakes during spring.

Santee-Cooper

Region IV staff conducted annual gill net sampling of Lakes Marion and Moultrie (collectively referred to as Santee Cooper Reservoir) in the winter of 2021/22. This represents a study that has been ongoing since 1984/85, initiated specifically to monitor the STB population in the system.

Of note for the 2021/22 sample was the overall catch rate of STB (10.4 fish/net night). This catch rate represents a ~20-30% decrease from the previous three years of sampling, but very similar to the 20-year average. It should be noted that starting in the 2018/19 season, a

historically unproductive sampling site for STB (Pack's Landing) was replaced by a previously unsampled site (Wyboo Creek) in which the habitat was expected to produce much higher catch rates of STB. This proved to be true and is reason for the higher than average catch rates observed in the previous three seasons, given that catch rates at other sites remained relatively stable.

Coincidental with the addition of the new sampling site was a regulation change which liberalized harvest restriction via reduced length limits (23-25" harvest slot vs a 26" minimum TL), although retained the same daily creel (three fish). Total mortality estimates have slowly increased each year since the most recent regulation change, estimated in 2017/18 at 42% to 53% in 2021/22, likely due to a higher proportion of the STB population being susceptible to harvest. Therefore, it may be that current harvest restrictions are starting to offset the inflated catch rates initially observed from the addition of the Wyboo sampling site. Given that nearly all fish on the system are five years old or less, full effects of the current regulation may be realized in the next 1-2 seasons.

Lake Hartwell

Boat Electrofishing

Boat electrofishing was used to assess adult Striped Bass *Morone saxatilis* (STB) and Hybrid Striped Bass *Morone saxatilis* x *Morone chrysops* (SWH) abundance and size distribution in Lake Hartwell. Boat electrofishing supplements experimental gill net sampling used to assess recruitment and size structure of Age 0-2 STB and SWH. Four creeks feeding Lake Hartwell were sampled with 42 STB and 60 SWH being captured in total. Mean relative condition for STB and SWH was right at 1.0 based on South Carolina standards. Fish schools were segregated with STB schools being found in separate creeks than SWH schools.

Lake Thurmond:

Boat Electrofishing

Late Winter – early Spring electrofishing assessment of Striped Bass populations were conducted on Lake Thurmond to supplement standard gill netting samples. Due to angler concerns, an exploitation study was started on Lake Thurmond in FY19. All the collected STB were tagged with a Floy reward tag and released; no fish were sacrificed for age determination. Covid-19 pandemic halted all sampling/tagging events during March – April 2020. SCDNR collected 86 STB at a catch rate of 10 STB/hour. STB total length ranged from 31 cm to 101 cm. Mean length and weight of STB collected was 713.7 mm (28.1 in) and 4,956.3 g (10.9 lbs), respectively. Relative condition (Kn) of STB collected was at or slightly lower than the 1.0 standard for South Carolina. A total of 334 STB have been tagged on Lake Thurmond in 2019-2021. As of October 2022, seventy-one (71) tagged STB were caught and reports by anglers. That is an approximate of 21% tag return. Approximately 70% (n=50) of STB caught were kept and 25% (n=18) were released.

Research

Great Pee Dee River Striped bass

The Great Pee Dee River supports a relatively small population of reproducing striped bass that has seemingly declined over the decades. Recent genetic analysis has determined that there does

not appear to be a unique Pee Dee stock left but indicates a mixture of North Carolina signature and Santee Cooper strain. In previous studies, a handful of adult striped bass were implanted with transmitters and results showed that some fish remained exclusively in the upper section of the river, while other fish utilized the entire length of the river at varying times of the year. In December of 2021, 10,206 phase II were stocked into the Pee Dee River. This brings the three-year total of phase II stocked fish to 96,430. Also in January 2021, 28 of the hatchery-raised phase II fish were transmitted with Vemco V-7 acoustic tags and quarterly receiver downloads were evaluated. During the spring of 2022 striped bass abundance index sampling resulted in 58 fish collected and fin clips were taken for genetic analysis. Of the 58 fish, 22 were designated as wild fish, and 36 were cultured fish. In 2022, 17% of the cultured fish were the result of directed Pee Dee stocking, which was down from previous years (31% in 2021 and 43% in 2020).

Santee-Cooper Striped Bass stocking assessment

Past data suggests that the Santee Cooper STB fishery is largely hatchery supported (>90% hatchery origin). We've evaluated the success rates of stocking phase I vs phase II STB juveniles. Evaluations from the 2014 year class suggested significantly higher returns of phase II fish through five years post-stock. However, evaluations of multi-phase stocking of 2017 and 2018 year classes are far less definitive with significant returns of phase II fish occurring sporadically year to year. These trends will continue to be monitored.

Spring monitoring of the Santee-Cooper Striped Bass Fishery

Historically monitoring of abundance, size and age structure, and condition of the Santee-Cooper Striped Bass population was restricted to winter gillnetting in Lakes Marion and Moultrie. That sampling has the advantage of sampling the population when it is mixed throughout the reservoirs during winter; however, relative abundance estimates are imprecise and the older age classes needed to estimate growth and mortality are infrequently captured due to the mesh sizes employed. A pilot study was initiated during 2021 to determine the sampling effort required to estimate the relative abundance and size structure of the Santee-Cooper Striped Bass population with spring-time boat electrofishing in the Congaree River. The results of that study indicated thirty 20-minute electrofishing samples would be necessary to determine a 50% change in relative annual abundance and to collect enough (~400) Striped Bass for annual length frequency comparisons. During spring 2022 a total of 11.25 hours of electrofishing resulted in the collection of 445 Striped Bass with a mean total length of 542 mm (Range; 228 – 989). A negative relationship between catch rates and turbidity indicated that capture efficiency of Striped Bass is likely negatively affected at higher river flows and that standardizing sampling will require collecting fish within a range of specified flows.

Pelagic Forage Abundance in Lake Murray

Over the last decade an average of 979, 961 (Range; 667,569 – 1.3 million) Striped Bass fry were stocked each spring to maintain the Lake Murray Fishery. Pelagic forage (e.g., Blueback Herring and Threadfin Shad) abundance, the primary prey of Striped Bass and the abundance of Striped Bass was unknown. Historically cove rotenone samples provided managers with estimates of standing stock, forage relative abundance and biomass; however, rotenone surveys have not been conducted during the last 20 years. Striped Bass relative abundance is currently monitored with experimental gillnets during winter. While the gillnet survey provides useful

information on Striped Bass relative abundance, growth and condition the abundance of Striped Bass is unknown. Understanding forage density and biomass, and Striped Bass abundance will better inform future management decisions. As such, this study, initiated in 2020, employs hydroacoustic gear to estimate pelagic forage density during summer. A secondary objective is to evaluate the potential of hydroacoustic surveys to estimate the density of large pelagic fishes including Striped Bass while their habitat is restricted during summer stratification. Reasonable density estimates of forage fishes have been determined each summer during the study. Partitioning that forage into the different forage species and estimating biomass has been hindered by an inability to develop a suitable method for capturing sufficient forage fish samples within depth strata. Evaluating hydroacoustics as a tool for estimating large target abundance within the preferred depth strata of striped bass has been hindered by hypoxic conditions in the hypolimnion which have forced striped bass to use the top of the metalimnion and to distribute over large expanses of the lake each summer.

Seasonal Movement and Habitat use of Striped Bass in the Edisto River

The Edisto River in coastal South Carolina contains a genetically distinct strain of Striped Bass that is identified as a fish of conservation need. Striped Bass in the Edisto River seek thermal refuge each summer in the most upstream reaches of the river system. Amendments to South Carolina water laws have exempted agricultural water withdrawals from the normal review and permitting process, which has resulted in corporate megafarms entering into the Edisto River basin with the ability to withdraw from the river, even during drought events. These water withdrawals are in or near areas where it is believed Striped Bass seek thermal refuge during summer. In this study telemetry is used to monitor the seasonal movements of striped bass in the Edisto River system and identify summer-time thermal refuges.

Edisto River Flow Effects on Summertime Water Temperatures: Are Thermal Tolerances of SWAP Fishes Exceeded at Low Flows?

Starting during winter 2023 the goal of this collaborative effort with Clemson University is to quantify the effect of mean daily flow on summertime water temperatures in the Edisto River, model summertime water temperature under current and future climate and water withdrawal scenarios and determine if thermal tolerances of SWAP fishes, including Striped Bass, are exceeded. Summer-time temperature selection of Striped Bass will be determined with telemetry and lab experiments will be used to determine the thermal tolerance of Edisto River Striped Bass.

Hatchery Report

During 2022 South Carolina Stocked 4,128,927 phase 1 fingerling Striped Bass into 7 reservoirs and 555,128 Hybrid Striped Bass phase 1 fingerlings into two Reservoirs.

The 2022 Striped Bass mean stocking rate in the Santee system was 20 STB/ac (no Hybrids are stocked in the Santee system). Savannah system stocking rates were 10.4 STB/ac and 6.4 HYB/ac in J. Strom. Thurmond Reservoir and 4.1 STB/ac and 7.4 HYB/ac in Lake Hartwell (Savannah rate includes fish stocked by both GA and SCDNR).

Tennessee

Name of Representative: Ted Alfermann

Texas

Name of Representative: Jake Norman

Virginia

Name of Representative: Dan Wilson

West Virginia

Name of Representative: Katie Zipfel

Stocking

In 2022, WVDNR purchased hybrid striped bass fingerlings and fry from Keo Farms in Arkansas. This allowed us to stock significantly more locations. Fingerlings were stocked directly into three Ohio River pools in cooperation with Ohio Division of Wildlife to stock each pool of the Ohio River. These fish were stocked at a rate of 5-6fish/acre. Fry were allowed to grow in the hatchery to fingerling size and subsequently stocked into the Monongahela River, as well as three southern reservoirs (Beech Fork, Bluestone and R.D. Bailey). Some fingerlings were held to advanced fingerling size and stocked into the Kanawha River and three additional impoundments (Castelmans Run, Rollins and Middle Wheeling).

Striped bass have been stocked into Mount Storm Reservoir for several years, but the population is now too far skewed toward smaller individuals, so it was not stocked in 2022 to allow for an improvement of size structure. While located at a higher elevation, Dominion Energy has a power plant located on this lake and the water is circulated through the power station for cooling which maintains a lake temperature of at least 60°F.

Research

No additional research was conducted by WVDNR on Morone species in 2022. We anticipate a research study to evaluate stocking success, movement and growth of stocked hybrid striped bass in our navigable rivers in the future.