Minutes from 2022 Meeting

Warmwater Streams Committee Meeting Agenda

Southern Division of the American Fisheries Society
January 20, 2022 – 9:00 AM ET
Charleston, South Carolina

Break from 12:00-1:00 PM for lunch
Followed by American Eel & Temperature Subcommittee meetings

Microsoft Teams Link (for all meetings): Click here to join the meeting
Some members and guests were not able to attend in-person so a digital option via Microsoft Teams was used in conjunction with attendees who were present in Charleston. After panic-induced technical difficulties from the sec/treas, the meeting started via Teams.

- **Call meeting to order—Stephen Curtis, Chair**
  Stephen was not able to attend due to a family emergency so Trevor Starks (sec/treas) oversaw the meeting.

  Jeff Quinn graciously volunteered to act as secretary and took minutes throughout the meeting

- **Approval of the Agenda**
  There was no discussion of modifying the agenda. Kevin Mayes made motion to approve the agenda and Jeff Quinn seconded – motion passed

- **Introduction of Technical Committee Members & Guests—Stephen Curtis**
  - Current members
  - New state reps
    Chad Kaiser in Georgia, Kevin Kubach in South Carolina, and David Wellman in West Virginia
  - Guests
    Roundtable introductions were made via Teams, then those attending the physical meeting introduced themselves.
    Present: Trevor Starks (ODWC), Jeff Quinn (AGFC), Jim Burroughs (ODWC), Adrian Stanfill (FWC), Bart Carter (TWRA), Robby Maxwell (LDWF), Marty Hamel (UGA), Josh Eubanks (LDWF), Hunter Hatcher (VDWR), Scott Smith (VDWR), Kevin Mayes (TPWD), David Young (TPWD), Corey Dunn (MS State COOP), Michael Kashiwagi (Maryland DNR), Jeff Williams, Kevin Dockendorf (NCWRC), Chad Kaiser (GWRD), Kevin Kubach (SCDNR), Sally Petre (TWRA), Justin Wolbert (TVA), Dustin Lynch (ANHC)

- **Determination of Quorum (5)—Trevor Starks, Secretary-Treasurer**
  A quorum was established.

- **Circulate sign-in sheet (virtually in chat box) —Trevor Starks**
  K. Mayes saved chat entries to be entered in meeting minutes

- **Secretary's Report—Trevor Starks**
  - Approval of 2021 Meeting Minutes

  Minutes were circulated when S. Curtis sent out the agenda. No discussion was had. T. Starks made a motion to accept the minutes. K. Mayes seconded – motion passed

- **Webmaster's Report—Bart Carter**
  - Warmwater Streams Committee Website
  - Facebook Page

  From 4-6-2021 to 12-16-2021 there was an increase in page views compared to the previous year (from 55 to 404). Lots of traffic on the Jimmie Pigg award page. The most popular search engine used was Google. Some links have been taken down (i.e. YouTube). Facebook – 216 followers, had 3 posts. Reached a little over 1,000 people.

- **Treasurer's Report—Trevor Starks**
  T. Starks attempted to share-screen via Teams only to realize the report was from the previous years' meeting. T. Starks used a hard copy to give treasurer's report. (SEE APPENDIX 1).
  Some discussion was had about other funding opportunities. Money market accounts are not performing well at the moment but other investment opportunities are limited with a smaller account if account is to be kept mostly liquid.

- **Chair's Report—Stephen Curtis**
  - Annual Report

    The chair is responsible for filing a report to SDAFS over the goings-on of the committee. Highlights of this report are included within "old business" (see below).
  - 2021 Jimmie Pigg Award Winners: Nathan Thompson (MS) & Joshua Mouser (PhD)

- **Old Business**
  - American Eel Subcommittee hosted symposium at 2021 SDAFS Meeting

    R. Maxwell reported the symposium went well and that hosting an eel symposium every few years works well.
  - Temperature Subcommittee formed in 2021

    J. Quinn reported goings on from the committee. Still looking for a long-term storage option for storage of continuous temperature data. Further discussion to be had at temperature subcommittee.
  - Other old business from Committee Members

    C. Dunn indicated he was the 2017 winner of the Jimmie Pigg award and wanted to thank the committee for the award as this was the first time he was able to attend the meeting in person since the award. He wanted everyone to know how important the award is for students.

- **New Business**
  - 2022 Jimmie Pigg Award
    - 2022 Award Winners

      Katie Morris is a Masters candidate at the University of Arkansas Pine Bluff working with Dustin Lynch to assess the impacts of fragmentation on the distribution and habitat use of Paleback Darter in the Ouachita Mountains

      Matthew Lewis is a PhD candidate in Eric Peatman's lab at Auburn University whose research focuses on the conservation and genetic assessment of Alabama's Redeye Bass.
    - Award Amount/Donations from state chapters

      Current award amount of $250 (plus $25 AFS membership & certificate/plaque from AFS) for both categories (= $550 +).
      Reminded members to please solicit donations from your state chapter.
      Some discussion was had about the amount given. K. Mayes believes the committee cannot afford to increase the amount until more funds are raised via chapter donations or charging for a workshop or symposium.

  - Vacant Technical Committee Member Seats

    Wade with Kentucky is taking a new position, so that will need filled. Trevor Knight has taken a position with FWC so a new MS member will need to be found as well. An up-to-date list of state reps is listed in APPENDIX 2.
  - Other new business from Committee Members

    No new business
  - Roundtable discussion (may need more time after lunch break)

    Roundtable discussions were conducted by moving through the state reps list and then opening the floor up to anyone else who had management/research activities to share with the committee. Discussion lasted beyond 11 a.m. ET and carried over into the eel symposium. (Eel subcommittee met from 1-3 ET and Temperature subcommittee met from 3-5 ET).

    Kevin Austin, Executive Director with SDAFS, popped in during discussion to say hello.

- **Adjourn**

Roundtable discussion

Roundtable notes were solicited from members prior to, and after the meeting. Notes that were shared are copied verbatim below. Reports given without accompanying notes are described using notes from J. Quinn and limited notes from T. Starks.

Texas – *report given by K. Mayes*
Research project on imperiled and SGCN are ongoing. Active in listing process on the way for

Pecos pupfish, peppered chub, several mussels. Working with feds and other partners with several river authorities' development of a CCA with assurances. Reorganization and planning session and identified priorities for the division. Now have 3 branches, Conservation and Management – reframed bringing conservation and management folks together to work together on nongame and sportfish in a holistic manner. The other: the science and policy branch. It is charged with regulatory folks, regulatory, commercial fishing permits, kills and spills team, invasive species science, regulations coordinator. A strong research program at the Heart of the Hills. Hatcheries is the third branch – they have 5 hatcheries. They have challenges ahead with striped bass and ShareLunker brood stock. The river studies program is reframed as river program with watershed conservation ecology along with rivers studies team (5 people). Kevin is native fish conservation coordinator. They have Clint Roberson as the freshwater mussel conservation coordinator. He will do the branch chief for sciency and policy branch.

2022 Texas Parks and Wildlife Department River and Stream Activities for the Southeast Fishes Council and SDAFS Warmwater Streams Committee State Reports

Restoring Guadalupe Bass **-** The Guadalupe Bass Restoration Initiative, which started in 2010, continues as a priority project for the Texas Parks and Wildlife Department (TPWD) Inland Fisheries Division. A 2020 annual report highlighting recent activities and results is available: https://tpwd.texas.gov/publications/pwdpubs/media/pwd_rp_t3200_2079_20.pdf . An updated report for 2021 activities is being assembled. For more information on the initiative contact timothy.birdsong@tpwd.texas.gov.

Use of fine-scale population and genetic data to inform Guadalupe Bass restoration stocking – Related to the Guadalupe Bass Restoration Initiative, TPWD continues to work to develop more efficient and effective methods to re-establish pure populations of Guadalupe Bass. A new project was initiated in 2019 to develop improved management and stocking strategies suitable for rehabilitation of Guadalupe Bass populations impacted by Smallmouth Bass introgression. This project will test effectiveness of developed strategies varying fish size and stocking density at a fine spatial scale (i.e., short (~1km) reaches separated by instream barriers. For more information contact nate.smith@tpwd.texas.gov.

Texas Instream Flow Program **-** Instream flow studies have been completed in the Trinity and lower Guadalupe rivers and final reports are expected in 2022. Data from this effort will be used to inform instream flow recommendations for maintaining a sound ecological environment. Study results will be used as best available science for water management to guide state agencies in managing rivers and streams. For more information see Texas Instream Flow Program contact kevin.mayes@tpwd.texas.gov.

Research to Inform Prescribed Releases for Blue Sucker in the Lower Colorado River, Sabine and Rio Grande **-** TPWD Inland Fisheries staff collaborated with the TPWD Water Resources Branch, Lower Colorado River Authority, and Texas Tech University on movement, population dynamics, and habitat occupancy studies of the state threatened Blue Sucker. Based on a study completed in January 2019 the upper boundary of population size in the 292-rkm study area was estimated at only 1,089 individuals, and recruitment since 2009 appeared weak. Because of the declining population trend TPWD staff have continued to do annual population monitoring. The most recent monitoring, completed in December 2021, suggested the population has remained largely unchanged since 2019. On a positive note, we

found continued evidence of a successful recruitment event in 2018. That cohort made up roughly 10% of our 2021 sample. For more information contact nate.smith@tpwd.texas.gov.

Environmental Flows Information Toolkit - TPWD has built a decision support tool, the Environmental Flow Information Toolkit (EFIT), to help develop and prioritize strategies for the protection and restoration of natural flow regimes and water levels in Texas aquatic systems. The web-based geospatial platform incorporates multiple data sources and integrated statistical models to serve critical information on water use, hydrologic alteration, and environmental flow targets to meet conservation objectives. EFIT will enable environmental flow practitioners and stakeholders to communicate and collaborate more effectively to achieve voluntary environmental flow protection and restoration strategies. A hydrologic dashboard for the Great Plains is currently available at https://tpwd.texas.gov/landwater/water/conservation/water_resources/efit/index.phtml. For more information contact kevin.mayes@tpwd.texas.gov.

BioBlitz Initiative - Since 2013 the TPWD River Studies Program has been collaborating with the University of Texas on bioassessments of rivers and streams adjacent to State Parks and Wildlife Management Areas. This initiative supports management needs of these properties, informs recreational initiatives such as the TPWD's Texas Paddling Trails and River Access and Conservation Area Programs, and guides future research and conservation efforts through TPWD's Native Fish Conservation Area initiative. Bioassessment reports include fish, benthic macroinvertebrate, freshwater mussel, riparian, and instream habitat data, as well as recommendations for improving conditions for aquatic and riparian species and recreational use. In 2022, bioassessments are planned for the Rio Grande River (Big Bend & Davis Mountains NFCAs) and Lavaca and Navidad Rivers (Central Coast NFCA). Completed bioassessment reports are available on-line at the River Studies Reports page on the TPWD web site https://tpwd.texas.gov/landwater/water/conservation/fwresources/reports.phtml. For more information contact stephen.curtis@tpwd.texas.gov.

Alligator Gar Research Assessing Inland and Coastal Alligator Gar within Coastal Rivers— Inland Fisheries Division staff continue to focus research on Alligator Gar populations. A study continues involving identification and estimates of abundance for adult Alligator Gar using side scan sonar in the middle and lower Brazos River. The project will examine Alligator Gar distribution and habitat characteristics across the longitudinal gradient of the two Texas river systems. Using these data, scientists will develop predictive relationships between habitat variables and Alligator Gar distribution in river systems and quantify and compare dynamic rates of Alligator Gar collected from upstream (inland) and downstream (coastal) reaches of the lower Brazos River. For more information contact clint.robertson@tpwd.texas.gov.

Recovery of habitat and fish assemblage in the Llano River following a flood— Following a large-scale flood in the Llano River watershed in October 2018, TPWD Inland Fisheries Division staff began a project to compare post-flood habitat availability and fish assemblage structure to pre-flood conditions that were documented in the preceding decade. The project will also assess the resilience of the assemblage with a focus on Guadalupe Bass, a species of greatest conservation need and also important to local recreational fisheries. Data collected in this project will help inform what, if any, actions might be taken to restore habitat or fish populations following a large flood. For more information contact preston.bean@tpwd.texas.gov.

Recovery of Macroinvertebrate Communities After Flooding Events in the Blanco, Colorado, and Llano Rivers - The objective of this study is to understand the effect of a catastrophic flood event on various

macroinvertebrate taxa, and to track the recovery of the macroinvertebrate communities until they stabilize. A final report should be completed in 2022. For more information contact archis.grubh@tpwd.texas.gov.

Collaborative Research to Inform Conservation Decisions for Imperiled Freshwater Mussels **-** In 2010, 15 of the 52 identified freshwater mussel species that occur in Texas were listed as state-threatened. Since that time, research to fill critical knowledge gaps for managing populations of these species has been a focus of TPWD. In the past three years alone, TPWD has collaborated with the United States Fish and Wildlife Service to fund approximately $1 million in State Wildlife and Section 6 program grants for freshwater mussel research. For more information contact clint.robertson@tpwd.texas.gov.

Maintaining instream flows and building public support for native fish and mussel conservation and river recreation in the Devils River Basin **-** The Devils River in southwest Texas is a unique desert river and considered the most pristine river in the state. It is home to many imperiled endemic species such as the Devils River Minnow; however, groundwater pumping poses an imminent threat of reduced spring flows. Baseflow reduction would negatively impact many already imperiled species and degrade one of the state's most remote and scenic paddling and angling destinations. TPWD continues to be engaged in a number of technical studies such as groundwater-surface water interaction and fish habitat availability modeling, as well as building relationships with landowners to help ensure the rivers future. In 2020 an agreement was secured with the Texas Water Development Board to develop hydraulic habitat models for priority reaches of the Devils River. For more information contact sarah.robertson@towd.texas.gov.

Salt Cedar Management on the Upper Brazos River – Since 2015, TPWD, in partnership with 100+ local landowners, USFWS Partners for Fish and Wildlife Program, and others, has implemented salt cedar management in the upper Brazos River. Salt cedar infestation poses issues for water, but also degrades habitat for fish and wildlife, including two imperiled fishes. Research studies are underway at sites throughout the upper watershed to evaluate the effects of salt cedar management on water budget, water quality, instream habitat, and riparian plant communities. For more information contact monica.mcgarrity@tpwd.texas.gov.

River Access and Conservation Areas Program **-** With more than 95% of the land in Texas privately-owned and the state's population expected to potentially more than double by 2050, the public's access to land for recreational use, especially land close to major urban areas where demand is greatest, is in increasingly short supply. In 2011-2012, TPWD developed the River Access and Conservation Area Program (RACA) to address the need for increased access to the state's rivers and streams. This program has leased 20 public river access sites along the banks of the Brazos, Colorado, Devils, Guadalupe, Llano, Neches, Nueces, Sabine, San Marcos and South Llano rivers. These leases provided access to more than 45 miles of new bank and wade fishing opportunities and have increased kayak fishing access to more than 250 additional miles of river. For more information contact john.botros@tpwd.texas.gov.

American Eel Studies **-** TPWD is partnering with the University of Texas at Austin, University of Houston-Clear Lake, USFWS, and citizen-science volunteers to assess the status of American Eel in Texas to better inform conservation and management decisions. The primary objectives of this study were to assess the distribution and abundance, habitat use, movement patterns, and population structure (genetics and demographics) of American Eel across all life stages. Field sampling is primarily focused on the Texas Coastal Plain with a concerted effort to collect glass and elver eel using a variety of gear types (including small-mesh fyke nets and eel mops). A final report for this project is in preparation. In 2020 a State

Wildlife Grant was funded which will build, install, monitor, and provide maintenance for up to 12 eel ramps, along the central to upper Texas Coast to further assess the current status of American Eel in Texas. For more information contact stephen.curtis@tpwd.texas.gov.

Monitoring Effects of Arundo Management Study - Arundo is a non-native, cane-like perennial grass that grows prolifically along riparian corridors in moist environments in the U.S. It has been shown to negatively influence riparian and instream environments by altering native riparian community composition, reducing riparian arthropod abundance and diversity, possessing higher proportions of non-native compared to native aquatic macroinvertebrates in root wad habitat, increasing modeled channel depth and current velocity and consuming higher amounts of water than native vegetation. Biological and physical habitat monitoring is being conducted in Barons Creek to assess the effects of herbicide treatment of Arundo and the success of native riparian reestablishment on a long-term scale in the Pedernales watershed. The purpose of this study is to compare biological and physical variables through all stages of Arundo treatment and riparian recovery to assess herbicide treatment effect on biological communities, riparian plant composition and physical stream habitat. Contact Monica McGarrity monica.mcgarrity@tpwd.texas.gov for more information on this project.

Development of an Index of Biotic Integrity for Large Rivers in Texas - The Texas Commission on Environmental Quality and TPWD have Indices of Biotic Integrity (IBI) which are relatively effective for identifying and classifying different levels of biotic integrity among fish and macroinvertebrate assemblages in wadeable streams across Texas. An important next step for Texas is the development of IBI's for larger non-wadeable rivers. A final report for this project should be completed in 2022. For more information contact stephen.curtis@tpwd.texas.gov.

Long-Term Assessment of Fish and Freshwater Mussel Community Impacts from a Newly Permitted Wastewater Discharge in the Sabine River **-** An inter-divisional TPWD team is assessing potential impacts to the Sabine River freshwater mussel community from a wastewater discharge from a new large-scale poultry processing plant. The proposed discharge location is in an area recognized by TPWD as a mussel sanctuary because of the known diversity and abundance of freshwater mussels. Objectives are: 1) Qualitative assessment of mussel community changes upstream and downstream of the wastewater discharge location over four years; 2) Quantitative assessment of mussel community densities and population dynamics; 3) assessment of juvenile mussel growth and survivorship utilizing mussel cages; 4) assess water quality changes; 5) assessment of long term fish community changes associated with potential water quality changes. For more information contact adam.whisenant@tpwd.texas.gov .

Assessment of a Desktop Floodplain Inundation Model Development Process for Biological Studies at a Large Scale - The objective is to compare the accuracy of floodplain inundation models derived from HEC-RAS to GIS derived models utilizing readily available digital elevation models and USGS rating curves. For more information contact clint.robertson@tpwd.texas.gov.

Development of Instream Flow Requirements through Spawning Habitat Availability for Alligator Gar Recruitment Success in the Lower Guadalupe River - Utilizing the Alligator Gar spawning habitat availability model developed by Texas State University and Alligator Gar year-class strength data developed by Heart of the Hills Fisheries Science staff the objective is to develop high flow pulse recommendations for successful Alligator Gar recruitment success for the Texas Instream Flow Program study on the lower Guadalupe River. For more information contact clint.robertson@tpwd.texas.gov.

Least Disturbed Streams: An Extension of the Texas Aquatic Ecoregion Project - This project is a continuation of the Texas Aquatic Ecoregion Project that originated in the early to mid-1980's. During that time period, a coordinated effort with the Texas Commission on Environmental Quality was initiated to sample least disturbed ecoregion reference streams to establish environmental baselines for the development of indices designed to evaluate aquatic life use (report available at: https://tpwd.texas.gov/publications/pwdpubs/media/pwd_rp_t3200_1086.pdf). The overall goal of the current project is to expand, refine, and consolidate the information on streams in Texas that can potentially serve as least disturbed ecoregion reference streams. The project will also contribute data in support of macroinvertebrate metric regionalization and objectives such as nutrient criteria development by providing data on background concentrations of environmental variables. For more information contact stephen.curtis@tpwd.texas.gov.

Activities submitted by Stephan Magnelia, 512-754-6844, stephan.magnelia@tpwd.texas.gov

Arkansas – *report given by J. Quinn. T. Starks dropped the ball on taking notes.*

Florida – *report given by A. Stanfill*
Issues with native black creek crayfish and introduced white tubercled crayfish. FWC growing out native mussels to reintroduce to improve eutrophication issues in southern lake.
Had issues spawning Shoal Bass to reintroduce in Chipola River. Currently working to find best solution to spawning Shoal Bass in captivity. Found in current study that streams seem to be more resilient to exotic species invasions than lakes. Reported concerns with future development in Florida and water availability.

Georgia – *report given by C. Kaiser*
Stream team working at half-staff. The GA team consists of 4 members, 2 of which took new positions and filling those spots has been slowed due to COVID complications. Currently working a lot with endemic redeye bass species. Recently hired a mussel biologist. Discovered Snakehead in Atlanta area pond and eradication efforts are thought to be successful.

Louisiana– *report given by R. Maxwell*
Extreme weather events once again dictated work in LA. Spring flooding and February freeze along with Hurricane Ida (CAT 4) caused sampling modifications throughout the year. Documented an estimated 1.8 million acre fish kill. Currently conducting a difficult Asian Carp telemetry project. Sampling carp is like herding chickens. Using two gill nets to capture (they jump over first net and into the second). Brought up concerns with Alligator Snapping turtle listing as there is a large number of constituents who use passive fishing gears that could be impacted by the listing. Found eel population below Toledo bend is stunted, have different diets than other populations with a lot of empty stomachs documented during sampling. Other projects in the state include eDNA for Western Sand Darter in the lower Sabine, and projects on Bluenose Shiner and Frecklebelly Madtom.

Mississippi State USGS Research Cooperative– *report given by C. Dunn*

Currently conducting research projects with USFWS to design standard sampling designs to be used by FWS personnel to do species status assessment collections on fishes and mussels. Current study organism for fish project is piebald madtom. Solicited committee for any information on a student interested in the mussel project. Also conducting Asian Carp research and crayfish work on headwater streams.

North Carolina– *report given by K. Dockendorf*
Agency has used website "Chronicling America", a digitized database of historical newspaper articles to find stocking reports listed in newspapers. They found several stockings that the department had no record of. Recently hired agency geneticist Heather Evans. Finding that is taking 6-7 years for native fish abundances to recover after hurricane-kills. This spurred discussion with R. Maxwell over pressures from constituency to stock fish immediately after hurricanes instead of letting the fishery recover on its own. Working on black bass genetics project. Have found switching to APEX EF boxes has helped with carp collections due to more customizable settings. State is becoming much more concerned with FL LMB stockings that they used to.

SDAFS Warmwater Streams Committee
North Carolina
Roundtable Discussion
Charleston, South Carolina
January 20, 2022

- **SARP's Southeast Aquatic Barrier Prioritization Tool (SABPT)**

  Objective: Prioritize NC dams for in-stream habitat restoration

  Talking point: Identified 218 dams (4% of all dams categorized)

  Take home:. Consider optimal stream miles to be made available for stream connectivity. .

  Point of Contact: Chris Goudreau, chris.goudreau@ncwildlife.org, 828-803-6045

- **Stocking native White Catfish in southeastern NC streams**

  Objective: Recover native catfish in southeastern NC streams

  Talking point: In September 2021, the N.C. Wildlife Resources Commission stocked over 150,000 white catfish in several southeastern North Carolina streams.

  Take home:. Invest in native catfish

Link to News Release.

Point of Contact: Kyle Rachels, kyle.rachels@ncwildlife.org, 252-548-4938

- **Black Bass Genetics Investigations in North Carolina**
  - Previous genetic analysis of black bass in North Carolina completed in 1994.
  - Update needed for allele frequency composition and degree of hybridization.
  - Fin clip analysis with SNP technology with Dr. Eric Peatman at Auburn University.
  - Currently in 4th year of the 5-year project.
  - Point of contact: Scott Loftis, scott.loftis@ncwildlife.org , 828-506-6688

North Carolina Updates Requested from NC organizations with Responses

Compiled by Kevin Dockendorf, Committee representative for North Carolina
kevin.dockendorf@ncwildlife.org or 252-312-6122
Presented by Kevin Dockendorf via e-mail to Warmwater Streams EXCOM and during the roundtable meeting

Oklahoma– *report given by T.Starks and J. Burroughs*
Other research in the state includes distribution of Blunface Shiner, Striped Bass telemetry, mussel distribution, and Asian Carp research. Discussion on bowfishing and using sportfish dollars on gar and buffalofishes. Fisheries Chief is retiring and position is open. Gave brief report on BA/BO compliance process.

A. ***Research***
1. ***Completed project on Introduced Trout in Spavinaw Creek (ODWC-OSU)***

- Request by private party to stock rainbow trout in Spavinaw Creek (spring-fed Ozark stream) in NE Oklahoma
- At request of ODWC administration, a temporary stocking permit was given and a research project documenting survival, diet, habitat use, dispersal, and species-interactions with native species was conducted
- Stocked trout were relatively large (average: 384 mm/15 in)
- In general, trout consumed a variety of prey resources and adapted well to a novel environment. Seasonally important prey items included: snails, crayfishes, mayflies, and fish.
- Using survival estimates and average crayfish consumption, we estimate rainbow trout consumed around 300,000 crayfish or 137 kg of biomass over the course of the study

- Direct predation occurred on Oklahoma SGCN. RBT consumed two fish SGCN's (Redspot Chub and Cardinal Shiner) and one crayfish SGCN (Neosho Midget Crayfish)
- Trophic level estimates put them at the same level as age-0 SMB and adult Redspot Chub
- Future analyses will specifically evaluate trout's effect on dietary niche of Neosho SMB. Likely to indicate significant seasonal diet overlap and preliminary results show evidence of a shift in crayfish size consumed by SMB after trout were introduced.
- Microhabitat use was also assessed and RBT had similar patterns of microhabitat selection as Neosho SMB and Redspot Chub
- The stocking permit was revoked in 2020, but large numbers of trout are still in the system

2. **Smallmouth Bass Genetics (ODWC-UCO)**

- Past study documented varying levels of introgression between introduced lake/TN strain SMB in Lake Tenkiller and native Neosho SMB in the Illinois River and its smaller tributaries
- One goal of the new project is to update the spatial distribution and directionality of introgressive hybridization since the 2015 study and assess parental contribution (i.e., preferential mate selection)
- Secondary objective is to quantify influence of genetic identity on individual growth rates of introduced, native, and hybrid populations frequenting the same river
- Fin clips and otoliths from 650 SMB across four streams (Illinois River, Baron Fork, Caney Creek, Flint Creek) and Lake Tenkiller were collected for this project. Diets were also collected to assess potential differences in diets among genetic strains.
- Otoliths should be processed by spring 2022 and genetic results (using nuclear and mitochondrial DNA) should be available by the end of 2022

B. **Management**

1. **Catfish Sampling**

- In May of 2021 we conducted 10 surveys for Blue Catfish and 12 surveys for Flathead Catfish in the Poteau River to augment sample sizes from 3 surveys conducted in 2016.
- Additional surveys increased Blue Catfish and Flathead Catfish sample sizes by 97% and 152%, respectively. Relative standard error around CPUE estimates decreased 51% and 73% for Blue Catfish and Flathead Catfish, respectively.
- At this point, the ODWC Stream Program has sampled 7 rivers since 2016 with cumulative sample sizes of 1,385 Blue Catfish and 537 Flathead Catfish.
- Max size, max age, fecundity, sex ratios, catch-per-unit effort, proportional size distributions, von Bertalanffy growth parameters, and annual mortality rates have been estimated for the rivers surveyed to inform management decisions for lotic catfish populations.
- Future surveys will add additional rivers to this statewide dataset and supplement sample sizes in rivers already surveyed when necessary.

2. **Fish Community Monitoring**

- Sampled the Verdigris Watershed in summer of 2021
- We conducted 150 surveys at 50 sites
- Documented 60 species including 3 SGCN (Bluntface Shiner, Redfin Darter, Shorthead Redhorse) and 2 non-native invasive species (Common Carp and Grass Carp)

3. **Black Bass Sampling**

- Substituted black bass sampling for sampling for the genetics project as the data generated can be used for our routine annual sampling

South Carolina– *report given by K. Kublach*

Post 2000, started standardized stream sampling within wadeable streams in the state (4-150 km sq watersheds). Use results from this work to for conservation planning tool and decision support tool. Began small river assessments in 2015. Conducted recent studies on Bartram's Bass. Currently working on IBI for streams. Continued issues with Alabama Bass.

- SCDNR Freshwater Fisheries Section
    - Regional Fisheries Management Offices
        - Regional river fish management and conservation
    - Statewide Fisheries Research – statewide assessment and regional support
        - Mark Scott, Coordinator
        - Kevin Kubach
        - Drew Gelder
        - Colton Lockaby
        - Megan Limehouse
- <u>Brief history/evolution of aquatic assessment work in South Carolina</u>
    - Pre-2000: Patchy surveys, varying methods
    - Early 2000s:
        - Formation of Stream Assessment Task Group within Freshwater Fisheries
        - Need for statewide, data-driven, proactive conservation framework:
            - Current status
            - Relationships with aquatic habitats, watersheds
            - Response to landscape change
        - Early standardized, statewide stream sampling
    - 2006-2011: **SC Stream Assessment** (SWG with Clemson University)
        - Wadeable streams (watershed area 4 – 150 km^2)
        - Standardized methods
        - 90 regional reference streams sampled annually by regional offices
        - 400 randomly selected sites sampled by the Stream Team
        - Key products:

- Resource estimates at multiple scales (e.g. species density estimates)
- Stream Conservation Planning Tool → modeling and decision support
- State Wildlife Action Plan (2015) → freshwater fish species conservation priority rankings (quantitative index)

  - 2015-2020: **Small River Assessment**
    - 100 randomly-selected small river sites (watersheds 150 – 2,000 km²)
    - Continue the "data/conservation flow" downstream from streams into small rivers
  - 2017-2020: **Status and Conservation of Bartram's Redeye Bass** (SARP/NFWF with Clemson University)
- 2020s: Current / planned work
  - **Development of an index of biotic integrity for evaluation of stream restoration activities** (with SCDNR Office of Environmental Programs)
  - **Bartram's Redeye Bass** status and conservation (C-SWG with Clemson Univ., Univ. of Georgia)
  - Round 2 of **SC Stream Assessment**
    - Revisit subset of Round 1 sites (assess change)
    - Sample additional randomly selected sites
- Aquatic assessment data and tools are used in many state and regional applications:
  - SCDNR Office of Environmental Programs (environmental reviews)
  - SCDNR Heritage Trust Database (e.g. species distribution records)
  - Regional species prioritization efforts (e.g. SEAFWA RSGCN)

LUNCH BREAK 12-1 pm ET

Tennessee– *report given by B. Carter*
TN incentives the harvest of Asian Carp from waters. Has removed over 13 million pounds of carp. This spurred conversation over whether removals have population level effects on Asian Carp (R. Maxwell thought they did not and B. Carter did not feel like there was enough data for Tennessee to confirm effects). Currently conducting larval carp and telemetry research. Moving forward with fish deterrent system with TVA and USACE. Working on IBI criteria with TN Tech. Working on Cumberland Plateau Musky genetics. Large project that has taken a lot of resources is development of Bill Dance signature fishing trail.

Virginia– *report given by H. hatcher*
Recently released SMB management plan. Reported issues with missing year classes in several populations that are historically strong and productive fisheries. Conducted musky mortality study. Reported issues with Alabama Bass invasions. Sending many samples to Auburn lab for genetics. VA is hosting SDAFS in 2023 and brought up possibility of workshop for black bass.

Southern Division AFS Warmwater Streams Committee Meeting

Virginia Chapter Update

Thursday January 20, 2022
Prepared by: Hunter Hatcher, Fisheries Biologist, Virginia DWR

- Management Plans
  - Muskellunge and Walleye Management plans completed and presented to DWR board
  - Virginia DWR beginning work on Smallmouth Bass Management Plan
- Regulatory Standards
  - Virginia DWR Adopted surface water withdrawal and intake standards
    - Intake fitted with a screen with openings no larger than 1 mm
    - Intake velocity not to exceed 0.25 fps
    - Intake will not withdraw more than 10% of instantaneous flow
- Project Updates
  - James River Musky Summer Catch and Release Mortality Study
    - Field work completed and manuscripts in preparation.
    - A total of 95 (2020 N=45; 2021 N=50) Musky tagged with radio transmitters.
    - Only 12 tagged Musky successfully angled during warm water period (July-August) with 4 mortalities (33%).
    - Closed Seasons would likely have little impact on improving trophy potential of the fishery.
  - Potomac River Northern Snakehead Recruitment Variability and Life History
    - Sampling continued in Summer 2021
    - Effective young of year sampling in 4 tributaries, 18 unique fry balls collected, over 500 individuals.
    - Daily growth ring analysis seems to indicate hatch date coincides with high flow events.
    - Awaiting results of otolith microchemistry analysis to assess movement of fish between tributaries in the tidal Potomac River.
  - Alabama Bass Genetic surveillance across lakes and rivers of Virginia
    - To date over 1,300 samples have been sent to Auburn University for genetic analysis, numerous samples still awaiting testing.
    - Alabama Bass have been confirmed in the following water bodies in Virginia: New River, Chickahominy River, Tidal James River, Fall-line James River, Claytor Lake, Lake Gaston, Buggs Island Lake (Kerr Reservoir), Philpott Lake, Martinsville Reservoir, and Diascund Reservoir.

        - Continued genetic surveillance planned with intensive outreach and angler engagement in an effort to prevent future introductions.
- Potential New Projects
    - Nesting Success and Survival of Early Life Stage Smallmouth Bass
        - Evaluate nest site selection and success of Smallmouth Bass in the James River.
        - Quantify age-0 Smallmouth Bass vital rates and identity critical periods and potential population bottlenecks.
        - Project pending approval with January 1, 2023 start date.
        - Internal investigation of Smallmouth Bass culture methods and efficacy.
- Ongoing Non-game Sampling
    - eDNA Sampling
        - Blackbanded Sunfish
        - Pygmy Madtom
        - Roanoke Bass
        - Yellowfin Madtom
    - Other Monitoring Efforts
        - Spotfin Chub
        - Duskytail Darter
        - Cryptic Clinch River fishes
    - Propogation Efforts Ongoing
        - Yellowfin Madtom
        - Duskytail Darter

University of Georgia– *report given by M. Hamel*
Conducting research project ranging from Swanee Bass exploitation, restoration of Lake Sturgeon populations, Blue Catfish population dynamics. Also monitoring a population of weather loach that was found in Atlanta area.

Start EEL Subcommittee – *Minutes provided by J. Quinn*

Attendance: Jeff Quinn, Bill Kirby (Saline River Authority of Texas), Kim Bonvechio (FL), Kevin Dockendorf (NC), Josh Eubanks (LDWF) Shelia Eyler, J. Burch, Josh Burch, Chad Kaiser, Kevin Mayes, Kayla Kimmel USFWS Baton Rouge, Kym Walsh (LDWF), Chad Landress (USFS -WV), Robby Maxwell, Scott Smith, Steve VanderKooy (Gulf States Marine Fisheries Commission), Arturo Vale (USFWS Texas), Scott Smith- VDWR. Most people are online.
Jeff Quinn provided an overview
Robby Maxwell overview – rethink how re-trap eels. 420 eels with FL method using them as bycatch. They would get 1 eel per hour electrofishing. They found the nematode spread throughout the state, but could not get metrics on it. Toledo Bend eels appear smaller than the the rest of the state.
Kevin Mayes discussed sampling in Texas. Trawls paired with eDNA sampling.
Kim Bonvechio update – They are trying to set up a fyke net citizen since project. Still have not gotten any. Last fall they did and age and growth on lower St. Johns river, probably the lower 90. They got 128 eels in 40 hours of electrofishing. They did see some male silvering eels in their samples. Only a few hundred eels landed in the state, so the fishery is almost gone.
Robby: do silver males have the same characteristics.
Kim: yes, long pectoral fins and large eye. When opened up the males are nothing but gonads.
Robby: Gird shocker – prepositioned.
Shelia Eyler sheila_eyler@fws.gov - (started 2021 in Susquenanna River) – She is working on a telemetry project. They tagged 20 eels and most went downstream and most escaped with 4 hydros. They had issues with arrays not making a full gate. Migration from August through November, and no downloads. They will do this for 2 more years. Typically they get eels over 700 mm to go. They have to go through Turbines. Both have Francis and Kaplan turbines. One dam is an eel chopper. The hydro companies are helping, with an annual report in May each year. These studies are hard because finding enough fish for meaningful samples. The end sample size can be very small and it makes it challenging. There was a lot of effort, with some days getting 3-4. Hoping to get 100 next year. It is a big system.
650,000 elvers moved up river. She is in the ACT – MATOS network. They are using other people's receivers to help out.
Kevin Mayes: Another item from Texas. UT created a display case on American Eel at the Life Science Library. Read about it here. https://biodiversity.utexas.edu/news/entry/a-case-for-eels We are also in discussions about hosting an event on eel at the upcoming World Fish Migration Day. https://www.worldfishmigrationday.com/ May 21, 2022

Steve VanderKooy
A Practical Handbook for Determining the Ages of Gulf of Mexico and Atlantic Coast Fishes, Third Edition (gsmfc.org)

Not dived in that far – we could touch base – we don't have a lot of data. The end report will be descriptive.
What kind of survival – The hydro has to have 85% survival at the projects, so companies need to do site specific testing. Preliminary now 95% survival at Cotawingo. The most upstream is killing a lot of fish, maybe most of them. In 5 years they will have basin wide study done.
Really small rack spacing may help at the dams, but how to do management will be a big hurdle.
Bill Kirby – Sabine River Authority – Have you seen survival through gates instead of turbines: No. They

don't have many gates in the east.
IN the east they request ¾ to ½ screens for hydropower in the NE like Main. The clogging is a big issue.
Zebra mussels and bryozoans a big issue in the south. Need a constant cleaner.
Atlantic States Marine Fish Commission: is doing a stock assessment that will be done in 2022. Nothing earth shattering. Difficult model. So they usually do a trends analysis.
Lack of glass eels and elvers and leptocephalus larvae is confusing. Susquahana – don't see them but maybe down in Gulf. The glass eels might be on coast only.
Shelia – wants to get a report when done with them.
Robby shared a link
https://utlists.utexas.edu/sympa/info/gom_eel

Gaston – eel way transported 3490 eels into Lake Gaston. Tagged with CWT. N. Gaston Eel way under construction. Downstream rapids tudy.. 28 eels caught 3 recaps. 2000-4300 eels in the area. Dominion Energy lead.
Scott Smith – Ronoke rapids downstream at fall line. Gaston is next one up. They passed over a million the past 10-12 years. They see 4000 acres…it took 8-10 fill up with eels before arriving at Gason dam in any sort of numbers. Both dams are 100 ft plus high, so the ladders go into a holding tank. Checked daily in peak, occasionally rest of year. Fish are about 120 mm migrating up the dam. Most are 2 years old give or take. Roanoke rapids is 40-60 miles inland from the sound.
See a few 300-400 mm eels passing up those ladders but not many.
Collaborative SWG grants – opportunities:
2023 Symposium – updates, projects, conclusions.

Temperature Subcommittee - *Minutes provided by J. Quinn*
RoundTable
David Young – Setting upa temperature sensornetwork in Brazos River. Have USGS network.
Kevin has a trinity river water quality model in development. Standard on how they will move forward with threasholds with min flows Funded a couple of SWG and section 6 grants. Kevin doesn't know the name of the model.
Matthew Troia – Asst Prof at UT San Antonio – Doing a lot of temperature monitoring, deploying loggers, recording at 15 minute resolution.
Projects

1. Appalachian – 160 streams from 2017-2021.. Published a little on it and would be useful. They will make the data available.
2. UT San Antonia - SWG project this spring – Hobo loggers in spring influenced streams in Edwards Plateu, about 60 loggers. Broad scale landscape on temperature and specific springs – 60 loggers on one spring to understand fine scale temp variation.

3. Sectio 6 project in pinto creek and another trib of the Rio Grande for the Devil's River minnow. Another 60 loggers in those streams. Start this spring and progressing.

Adrian Stanfill – Fl fish and wildlife – outside tampa – Paucity of USGS data is a problem. Water withdrawals are important for models. They have a lot of data in files.

Jeff Quinn provided an overview for Arkansas.

Proposed Workshop discussion
JQ: Potential to ask
Ask Dan Issaak with USFWS;
Mathew Troia – maybe linking lab and field data
CAUHSI – a data storage solution
EPA – Contdata QC
USGS – StreamThermal
The Canadian Group output
Kevin thought we could organize a workshop into: Science, Ecology, Hydrology, Data Retreival and storage, modelling
Kevin suggested writing up a workshop proposal for review and potentially charge $50 for professionals and free to students.
Hunter Hatcher thought it was a good idea to have a morning session for applied monitoring (logger installation, site selection, data storge etc) and an afternoon session on Data analysis, applications, and communication. So morning how to collect it and afternoon how to use it.
David Young noted that we need to have a section on how to use the data and how to communicate the data in a social context with social scientists.
David Young discussed having another effort outside the workshop. The group discussed possibly organizing a multi-state SWG grant. This could get more people involved. A regional grant could help with building out a database.

Possible Large Grant Program

Kevin Mayes noted that IFC could be a springboard for submitting a multi-state AFWA Multi-state conservation grant for temperature monitoring.
Matt Troi is connecting lab phydiology with field temperature monitoring in the SWG grant.
Adrian thought there is a lot of data sitting on shelves not being used.
Hunter thought 6 people would be interested in attending from VI
The grant could include uploading data in a data sprint type framework for existing data. So pay states to have techs upload data to Cauhsi.
Kevin discussed we should look at data longevity in CAUHSI and if will be funded long term. They want data longevity assurances.

Warmwater Streams Committee
Southern Division, American Fisheries Society
Financial Statement
January 01, 2021 – January 13, 2022

Money Market Account Balance 01/01/2021 $ 5845.80

Itemized Income

1/20	Dividend	$ 0.01
2/22	Dividend	$ 0.01
2/25	Donation, TCAFS	$ 250.00
3/22	Dividend	$ 0.02
4/20	Dividend	$ 0.01
6/21	Dividend	$ 0.01
7/20	Dividend	$ 0.01
9/20	Dividend	$ 0.01
12/31	Dividend	$ 0.01

Total Itemized Income **$250.09**

Itemized Expense

Check 1039 – Jimmie Pigg Award Plaque (2020)	$ 22.00
Check 1040 – Jimmie Pigg Award-Josh Mauser	$ 260.00
Check issued by EJ – Jimmie Pigg Award-Nathan Thompson	$ 275.00
Check Reorder Fees	$ 9.00

Total Itemized Expense **$566.00**

Income Less Expense **$(315.20)**

Account Summary

Balance on 01/01/21 $ 5,845.80 Total Income for Period $ 250.09

Balance on 01/13/22	$ 5,529.89	Total Expense for Period	$ 566.00
		Net Gain/Loss for Period	$ (315.20)

Appendix 2. Current list of WWSC State Reps

State	Name	Email	Phone
AL	Steve Rider	steve.rider@dcnr.alabama.gov	(334) 850-6123
AR	Jeff Quinn	jeffrey.quinn@agfc.ar.gov	(877) 470-3309
FL	Adrian Stanfill	adrian.stanfill@myfwc.com	(863) 648-3807
GA	Chad Kaiser	chad.kaiser@dnr.ga.gov	(706) 557-3233
KY	VACANT		
LA	Robby Maxwell	rmaxwell@wlf.la.gov	(337) 491-2575
MS	VACANT		
NC	Kevin Dockendorf	kevin.dockendorf@ncwildlife.org	(252) 335-9898
OK	Jim Burroughs	jim.burroughs@odwc.ok.gov	(918) 683-1031
SC	Kevin Kubach	kevink@dnr.sc.gov	(864) 982-2778
TN	Bart Carter	bart.carter@tn.gov	(423) 587-7037
TX	Kevin Mayes	kevin.mayes@tpwd.texas.gov	(512) 754-6844 ext. 224
VA	Hunter Hatcher	hunter.hatcher@dwr.virginia.gov	(276) 783-4860
WV	David Wellman	david.l.wellman@wv.gov	(304) 825-6787