



Cape Fear River Partnership

Fall 2022 Session

September 21, 2022; 9 am – 12 pm
Microsoft Teams Virtual Meeting

Agenda

- 9:00 Welcome and Introductions
- 9:15 Alligator Creek Restoration, Eagles Island – Christine Pickens, PhD, Unique Places to Save (UP2S)
- 9:45 Dam Removal, Safety, and Special Features – Scarlett Kitts, Schnabel Engineering
- 10:15 eDNA survey results for sturgeon and American shad in the Cape Fear River – Heather Evans, NC Wildlife Resource Commission
- 10:45 Cape Fear River basin framework update and survey results – Nora Deamer, Basin Planner, Division of Water Resources
- 11:15 Discussion of Cape Fear River Partnership future priorities – ALL
- 12 Adjourn

Summary of meeting will be posted to the Cape Fear River Partnership website
www.capefearriverpartnership.com



Cape Fear River Partnership Fall 2022 Session

September 21, 2022
9 AM – 12 PM

Microsoft Teams Virtual Meeting

Virtual Meeting Attendees

Anne Deaton, NC Division of Marine Fisheries	Heather Evans, NCWRC	Brena Jones, NCWRC Aquatic Wildlife Diversity Program
Bill Post, SCDNR	Deanna Hardesty, USGS	Kathryn Pohlman, Assistant Director of Environmental Management and Sustainability at CFPWA
April Boggs, NCWRC	Kat Hoenke, Southeast Aquatic Resources Partnership	Krista McCracken, NOAA
Brian Rostholder, CoW Stormwater Services	Robin Hoffman, NCDEQ, DWR, Basin Planning Branch	Chance Lambeth, Congressman Rouzer's Office
Chris Rainey	Howard Schnabolk, NOAA	Luther Aadland, Fish Passage Expert
Christine Pickens, Unique Places to Save	Jason Green, Fayetteville Public Works Commission	Madi Polera, NCSU
Chuck Baxley, Fayetteville Public Works Commission	Jill Deaney	Rachel Massa, NCDEQ Stewardship Program
Nora Deamer, DEQ, DWR, Basin Planning Branch	Jim Kapetsky, Retired GIS Consultant	Dylan McDonnell, New Hanover County Planning & Land Use
Kyle Rachels, NCWRC	Rhonda Locklear, FPWC	Scarlett Kitts, Schnabel Engineering
Roger Shew, UNCW	Chris Stewart, NCDMF	Fred Tarver, NCDEQ
Ted Wilgjs, NCCF	Tony Young, USACE	Mike Wicker, USFWS
Dawn York, Moffatt & Nichol, Cape Fear River Partnership Coordinator	Samantha Morrison, Moffatt & Nichol	Kim Harding, NCDMF
Peter Raabe, American Rivers		



Welcome and Introductions

Dawn York (M&N and CFRP Coordinator) is working to update the CFRP website with meeting minutes and presentations to use as a resource. Dawn is interested in gathering feedback regarding an in-person meeting soon.

Alligator Creek Restoration, Eagles Island – Presented by Christine Pickens, PhD, Unique Places to Save (UP2S)

- Goals are to conserve and restore wetlands on the island
- Areas of focus include:
 - Flood Resilience
 - Water Quality
 - Habitat Protection
 - Species of Concern
 - Public Access
 - Recreational Opportunities
- Preserve and provide onsite interpretation of cultural and historic aspects
 - NE corner of Gullah Geechee Cultural Heritage Corridor
 - Tell stories of the land
- The project looks to reestablish 1900' linear feet of main channel and 2000' tributaries for benthic habitat at Alligator Creek
- Increase tidal exchange in the project area
- Reduce acreage of invasive Phragmites
- Increase resilience of uplands to future expected conditions
- Purchase parcel with creek mouth, Phase 1 ESA complete, getting appraisal
- Currently working on Baseline Assessment
- Drone has capacity to do vegetation community mapping
- Phragmites Treatments and Possible Secondary Treatments
 - Drone directly applies herbicide to the Phragmites
 - Very little waste due to high precision of drone and less human interaction
 - Used by NCDOT and on National Park Service lands
- Experimental Design Approach
 - Before After Control Impact (BACI)
 - Pre vs Post Restoration (BEFORE/AFTER)
 - Reference Site vs Restored Site (Control/Impact)
- Metrics
 - Tidal Creek characteristics



- Vegetation and benthic communities
- Hydrology (wells)
- Salinity and pH
- Assess effectiveness of treatments
- Drone or other aerial imagery
- Growth metrics
- Highly dependent on design (upland resilience)
- Funding provided by National Fish and Wildlife Foundation, and others
- Christine is interested in fish populations and how they could be using this Creek
- Potential for site to provide additional habitat

Questions/Discussion

- Dawn York to Christine Pickens: Who collected the drone/topo data?
 - Christine responded that the drone is taking thousands of images. LIDAR capacity. There is local LIDAR combined with imagery capture. Provides 3D representation of the site.
- Anne Deaton: USACE did a beneficial-use project. They have fishery management staff sampling. There is information out there. Growing increase in how we can restore nursery areas. It would be a great component to the project to add monitoring of fish.
 - Christine responded that they cannot spend a lot of money on monitoring. Going to collect data from baseline assessment. Hopefully can expand to include monitoring fish.
- Chris Stewart: There will be additional data from surveys. Tag a lot of adult striped bass in that area. Stations at Horseshoe Bend and Smith Creek.
- Christine: If we can use this to further fish habitat and make better decisions, then we are all for it.
- Mike Wicker: There is connectivity. It is worthwhile to get that information.
- Dylan McDonnell (via chat): Reach out to Troy Alphin with Benthic Laboratory at UNCW Center for Marine Science about benthic sampling and the work they do.
- Dawn: Jim has more knowledge on Eagles Island and vegetation mapping. Jim would be good resources as well.

Dam Removal, Safety, and Special Features – Presented by Scarlett Kitts, Schnabel Engineering

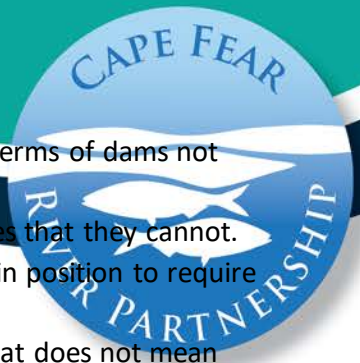
- Hoosier Dam on Rocky River
 - Dam was safely removed in 2018
 - Kayakers were already using open river passage before Dam was completely removed
 - Dam removal is part of good engineering practice
- Hope Mills Dam
 - Specially structured for eel passage
 - Design and install minimum release pipping/monitoring equipment



- Working with different clients to install design and install minimum release pipping/monitoring equipment
- Work with fisheries
- Arkansas River Diversion
 - There is a ton of recreation in this area
 - Design to control sediment

Questions/Discussion

- Mike Wicker: There is funding available to do eel passage. No idea what the cost would be. Wonder if there is a way to get conceptual understanding. It would be good to have some idea before starting the process.
- Scarlett Kitts: There will be a feasibility study before we do any kind of design system. Work with biologist and those working in the river who know what kind of capacity is needed.
- Mike: With Hope Mills, the Dam was lost and then rebuilt. There was a regulatory nexus. But there is a way to do it without regulatory nexus. It would open a lot of opportunities.
- Dawn York: How far upstream in the Cape Fear have eels been observed?
 - Brena Jones (via chat): Eels can go just about all the way up. There are heaps in the Deep and Haw Rivers.
 - Scarlett: I do not know. Looks like rain gutter and they climb up and are captured in the basket. Not sure how much further they go upstream.
- Dawn: Has the coastal fund program been stable?
 - Mike: There is funding out there to do some stuff. Cost is critical need. What is the ask as far as dollars? Hard to get funding if you do not know what the bottom-line figure is going to be.
- Dawn: Great opportunity to meet another firm doing dam removal. Shortage of staff/organizations that can take on complicated challenging projects. Good to know there is another local partner.
- Kat Hoenke: Been developing Active 150 list. Have a lot going on and want to connect and collaborate with Scarlett. List is on hold due to transferring ownership.
 - Active 150 list can be found at <https://docs.google.com/spreadsheets/d/1Eh4-kAoEjrylDsbs1pGKBfbJEXsUCs/edit?usp=sharing&ouid=111745745365450029395&rtpof=true&sd=true>
 - Tool is also available at <https://connectivity.sarpdata.com>
- Scarlett Kitts contact information: skitts@schnabel-eng.com
- Bill Post to Mike (via chat): Of course, you know each dam and passage needs are unique. It also depends on the going price of materials, but we installed a couple of eel passage ramps at a low head dam on the Goose Creek Res. for ~ \$50K. Must know where the eels are coming from.



- Dawn: Would you see benefit of eel passage on certain dams? In terms of dams not being able to be removed in the future?
 - Mike: I think so. There are dams they can get over and ones that they cannot. Would be great targets for those that cannot. We are not in position to require the Corps to do that.
- Brena (via chat): Eels are currently making it up the system, but that does not mean they could not use improved access in places.

eDNA Survey Results for Sturgeon and American Shad in the Cape Fear River – Presented by Heather Evans, NC Wildlife Resource Commission

- eDNA (Environment DNA) for presence of fish
- The eDNA is picked up in the water
- Sample at four sites
 - Below Lock and Dam 1 and 2
 - Below and Above Lock and Dam 3
- 2021 Sampling
 - Between March 15-May 3
 - 114 samples
 - eDNA collection
 - eDNA filtering, a lot of sedimentation from the Cape Fear River
 - eDNA extraction
- Update on the American Shad eDNA
 - Louis Plough developed Shad probe
 - Field tested at all collection sites
 - CQ value is number at PCR where we see positive detection across negative threshold
 - We know Shad can pass Lock and Dams
 - Detection of eDNA in the system depends on a lot of factors
 - Interested in looking at temperatures. Seeing in late April and early May it is more difficult to detect eDNA.
- Update on the Atlantic Sturgeon eDNA
 - Louis Plough developed
 - Sturgeon able to reach Lock and Dam 1
- 2022 Sampling
 - Expanded from four (4) to eleven (11) sites
 - Between Feb 4-First week of May
 - 477 samples
- Collaborators included:
 - NCWRC – Kyle Rachels, April Boggs, Madelyn McCutcheon
 - North Carolina Museum of Natural Sciences
 - Clemson University – Troy Farmer and Aaron Bunch

- Army Corps of Engineers – Ashley Hatchell
- The Nature Conservancy – Julie DeMeester
- University of Wilmington – Fred Scharf
- University of Maryland – Louis Plough and Chelsea Fowler



Questions/Discussion

- Luther: Since we have fish passage at Lock and Dam 1, and Sturgeon documented, whether you attribute presence below 2 to pulse or fish passage, curious of evaluation.
- Heather Evans: Natural pulses for Shad, Sturgeon we are not sure, but may be due to pulse. Pulse would have allowed them to reach Lock and Dam 1. Sturgeon need either a heavy natural rainfall even or flood pulse.
- Mike Wicker: Migration may have been timed with the pulse. One is behavioral and one is physical limitation. Could be correlation is behavioral.
- Heather: We think pulse helped initiate migration. Not mutually exclusive. Could have helped them over 1 and migration.
- Luther: Be careful about assumption that they are not able to get through.
- Bill Post: Did all of this happen post modification?
 - Heather: Yes.
 - Bill: Is there a threshold in which you would not use this?
 - Heather: I do not know about a threshold. It will depend on the shedding rate and how close you are to the fish. If they are present, you will still be able to find it.
 - Bill: What are your thoughts about looking at effective population size?
 - Heather: eDNA would not be able to give you that. You need a marker.
- Mike: Can still have tremendous concern for Shad, even if a few fish are getting over.
- April Boggs: Sampled at Buckhorn Dam. Saw some Shad there. We did not see Shad below Buckhorn. Only went once. We were seeing them get caught up behind Lock and Dams.
 - Heather: Were modifications done for sampling in 2021?
 - April: No, modifications not completed until 2022 season.
 - Dawn: Construction of modification was in November.
- Mike: If you are sampling a place on time, would caution some of the conclusions. What was the basis for small vs. large Sturgeon getting over?
 - Heather: Physics.
 - Luther: Atlantic just as capable of passing.
- Kyle Rachels: Sturgeon eDNA detections at 1 and 2, the only observation above 1 was Fall 2016 or 2017. Difficult to attribute fish to passage or due to weekly maintenance at 1. Prior to this eDNA, there was only one single observation. It is difficult to attribute to which method.
- Heather: Have not seen Sturgeon as a rule above 1. I do not think behavioral rules out structural.



- Dawn York: Received data from FWRC. It is good to know that we still have opportunity to make changes and impacts in the river. Having this information is very valuable.
- Bill: Giving timing and pulses, you will see that there might have been some passage there.
- Heather: We are synthesizing all data to have three metrics to analyze passage on the river.

Cape Fear River Basin Framework Update and Survey Results – Presented by Nora Deamer, Basin Planner, Division of Water Resources

- Goals include:
 - Develop a plan that is relevant, informative and can be adapted as needed
 - Include the input of community members, stakeholders, and organizations currently working and living on the river
 - Expand our reach to all populations and listen to voices of underrepresented communities, communities of color and Indigenous communities
 - Identify priority issues from all the input and information gathered
- Timeframe
 - CFRB Plan and Process Development Q2 2022
 - Attend Community Meetings June-September 2022
 - Gather All Public Comment, complete by October 1, 2022
 - Submit Basin Plan to the Environmental Management Commission (EMC) by end of December 2022
- [survey link](#) for Cape Fear River Basin Plan
- River Planning Cycle
 - It has been almost 20 years since the last Plan
 - Provides a benchmark for where we have been, where we are, and where we are going
 - Uses scientifically based water quality and water quantity analysis for planning purposes
 - Identifies areas where additional monitoring is needed to address impacts or impairments
 - Provides guidance to support decisions about water resources management
 - Serves as an educational tool for community members, stakeholders, decision makers, and organizations focused on water resource management
- The Plan includes:
 - Basin Characteristics
 - Geography
 - Population and land cover
 - Pollution Sources
 - Monitoring Data and Water Quality Assessment



- Overview of biological, chemical, and physical parameters
- Permitted and Registered Activities
 - General description of existing water resource programs
- Local Water Quality Initiative and Funding Opportunities
 - Descriptions of stakeholder groups and watershed activities
- Water Use and Availability
 - Summary of water use in the basin
- Watershed Chapters (HUC 8)
 - Watershed specific information and recommendations
- Basin plans provide guidance to support decisions for:
 - Permitting strategies
 - Nutrient management strategies
 - Watershed resource planning and implementation of Best Management Practices
 - Water supply and demand decisions
- The Plan does not include:
 - New rules and regulations, basin plans are for planning purposes only
 - Information on all pollution sources across the basin – point and nonpoint sources
 - Water quality analysis on all waterbodies
 - In-depth evaluation of emerging compounds
- Water quality data does not cover all water in the basin
- Can only provide information where we have data
- Because the topic is changing so quickly, better to give background information and point to departments working on it
- Link to DEQ Framework for Cape Fear River Basin Plan. Please share within your organizations and colleagues. [28478982_1.pdf \(grcgcustomers.s3-eu-west-1.amazonaws.com\)](#)
- Cape Fear River Assembly
 - All comments will be documented and catalogued
 - Publish the priorities of the communities, organizations, and stakeholders in a transparent way
 - Include information that is not part of the Plan in cataloguing process and provide resources and community connection
- Division of Water Resources
 - Comments will be considered for inclusion in the Plan
 - Share information across the divisions of DEQ
 - Continue to work with stakeholders and resource agencies to prioritize issues for inclusion in plan updates
 - Develop recommendations to address concerns identified during plan development



- Basin planning provides a single location to present water quality and water quantity related issues
- General Statute 143-215.8B – Basinwide water quality management plans
 - Watershed-based approach to managing water resources
 - Considers the cumulative impacts to all activities across a river basin (point and nonpoint sources of pollution)
 - Consider all transfers into and from river basins (IBT's)
 - Provide that point and nonpoint sources jointly share the responsibility of reducing pollutants to the State's waters
 - Report on the goals to reduce nutrients in NSW watersheds
 - Basin plan required every ten (10) years
 - Basin plans are not a rule
- Survey
 - 157 responses
 - New Hanover County with highest response so far
- Survey Results
 - 80% responses “yes” or “somewhat familiar” with the Plan
 - 71% are affiliated with group to protect natural resources
 - Want to learn more about:
 - Sources of potential pollution to Basin
 - Health of rivers and streams
 - Policies regarding the Basin
 - Biggest challenges regarding water quality:
 - Current management
 - Lack of prioritization
 - Lack of oversight
 - Development pressures
 - Ways identified challenges can be addressed:
 - Improving management measures
 - Increasing oversight
 - State elected officials prioritizing water protection
 - Increasing funding and monitoring for data collection, data monitoring, technical assistance, and planning
 - Providing technical and financial assistance to develop watershed action plans and/or implement best management practices (BMPs)

Survey - <https://forms.office.com/pages/responsepage.aspx?id=31F2etC5mkSFw-zCbNfGURy0IHs1dGgJ5QT3i27UBUQUZRUIAxVDU1V1ZSN0IT1hSRDVCNjVaUyQIQCN0PWcu>
Framework – <https://deq.nc.gov/water-resources/planning-section/basin-planning/bpbcape-fearframework-cfrjuly2022>
Informational flyer - <https://deq.nc.gov/water-resources/planning-section/basin-planning/bpbcape-fearinformational-flyerjuly2022>



Questions/Discussion

- Dawn York: What has been the biggest challenge for this Plan while developing?



- Nora Deamer: We have been participating in meetings more than working on the Plan. There are three (3) coalitions who collect data. Recognize there is a lot of excess nutrients in the Basin. The nutrient model will be completed by 2023 and will allow us to understand the system a lot better. Hopefully with a story map, we can update the Plan as information becomes available.
- Luther (via chat): In September 2014 an Atlantic sturgeon was observed jumping 30 miles upstream of LD1 (below LD2). In September 2016 a 48-inch Atlantic sturgeon was caught 9 miles upstream of LD1. In April 2017 a 30-inch sturgeon was observed at LD2. In April 2022, three or four Atlantic sturgeon were observed within the LD1 fishway and photographed (video) by an angler. No sturgeon had been recorded upstream of LD1 prior to construction of the fishway.
- Nora: We want to work with everyone on how we can incorporate fish passage information into the Plan.
- Dawn: What is the timeframe? Will help facilitate a fact sheet.
 - Nora: Not sure how much we can incorporate into the Plan before the timeline is expired. But certainly, interested in all the work and goals for moving forward to put that into the Plan.
 - Mike Wicker: There is a lot more funding that can come from federal agencies.
- From Nora: Flyer - <https://deq.nc.gov/media/30834/open>

Discussion of Cape Fear River Partnership Future Priorities – ALL

- Bill Post: Fish passage concerns and focus on species included in the NC's State Wildlife Action Plan. <https://www.ncwildlife.org/plan>
- April Boggs: Fish passage and water quality.
- Christine Pickens: Thinking through coastal wetland and estuarine, anything to elevate and include in Basin Plan to benefit at large. It is important to connect local communities to the river. Want to see how to address quality of life in the Basin and public outreach. With fish passage, maybe there is some funding through port and harbor deepening.
- Anne Deaton: Fish passage improvement. The Plan includes quantity as well as quality now. We are doing pulsing of water to simulate natural flow, which affects passage and water quality. Wetland conservation is big emphasis if you restore and maintain that it will help water quality. Recommendations to improve water quality with nature-based solutions. Land conservation to allow wetland migration and voluntary nature-based solutions that would incorporate wetlands to help the system.
- Links (via chat):
 - <https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan> 2021 CHPP
 - <https://deq.nc.gov/media/31323/open> CHPP Flyer (Summary)



- Mike Wicker: More expansive voluntary buffer with target.
- Jason Green: Nutrients are a huge topic. Needs to be explored with where the division is at right now.
- Howard Schnabolk: Continue with implementation. Unique aspect of partnership is ecosystem approach. Water quality, building economic arguments, outreach, and education, and engaging the community.
- Brena Jones: There are a lot of rare species in the Cape Fear Basin. A really important issue is the exotic species. There are two main prongs: (1) understanding what is on the landscape and how to deal with that we can, and (2) be proactive about addressing issues and preventing future introductions.
- Krista McCracken: The need to identify policies that can be changed or updated. Opportunities to highlight where changes can take place at the policy level.
- Dawn York: It is time to revisit the Plan. Would love to work on updating the Plan.
- Luther: Restoration of strictly freshwater. Given water quality issues associated with hurricanes and riparian land use issues contributing to water quality issues. I think it is great to see the recognition of the importance of hydrology, water quality, geomorphology, biodiversity, and connectivity in Cape Fear restoration. I really appreciated the flood pulse presentation and efforts to naturalize hydrology to the degree possible. We have seen dam removal and nature-like fish passage bring back strictly freshwater fish and mussel species and I think the importance of connectivity to entire assemblages, not just anadromous ones is important.
- Dylan McDonnell: Policy directives. Encourage others to look at states that have river basin policy at the state level. Georgia has planning criteria for this.
<https://rules.sos.ga.gov/gac/391-3-16>
- Peter: Fish passage and river connectivity. Figure out how to bring people together. Climate change and addressing forward thinking.
- Kyle Rachels: Would value an in-person meeting for the partnership.
- Christ Stewart: Habitat and fish passage. Get the public involved.
- Fred Tarver: Ecological flows.

- Anne Deaton asked for the report or results from the CFR culvert study.
- Dawn York can provide information for the Black River Aquatic Connectivity Assessment.

Summary of the meeting will be posted to www.capefearriverpartnership.com

Meeting Adjourned