



# Cape Fear River Partnership

## Spring 2023 Session

March 2, 2023; 9 am – 12 pm  
Microsoft Teams Virtual Meeting

### Agenda

- 9:00 Welcome and Introductions
- 9:15 Cape Fear River Fish Passage and Pulses Update – Julie DeMeester, The Nature Conservancy
- 9:45 SARP Barrier Assessment Training in the Lower CFR– Katie Lokey, Kris Bass Engineering
- 10:15 AOP Barrier Removal within the Cape Fear River– Colin Mellor, Eastern Regional Team Lead, NCDOT
- 10:45 Resilience Assessment for the Cape Fear River Basin and future efforts– Greg Dobson, Director of Geospatial Technology, University of North Carolina at Asheville
- 11:15 Open Discussion
- 12 Adjourn

Summary of meeting will be posted to the Cape Fear River Partnership website  
[www.capefearriverpartnership.com](http://www.capefearriverpartnership.com)

North Carolina Dam Removal Handbook:  
[https://www.americanrivers.org/wp-content/uploads/2023/01/NC-Dam-Removal-Handbook\\_FNL46.pdf](https://www.americanrivers.org/wp-content/uploads/2023/01/NC-Dam-Removal-Handbook_FNL46.pdf)

**Cape Fear River Partnership**

Spring 2023 Session

March 2, 2023 | 9AM-12PM

Teams Virtual Meeting

***Meeting Attendees:***

Jeremy McCargo, NCWRC

Mark Vander Borgh, NC DWR

Sean Farrell, NCDOT Division 3

April Boggs Pope, NCWRC

Fritz Rohde, NOAA Fisheries

Grace Messinger, Piedmont Triad Regional Council

Kyle Rachels, NCWRC

Cindy Simpson, NCWRC

Joe Facendola, NCDMF

Brian Rostholder, City of Wilmington

Beth Eckert, Cape Fear Public Utility Authority

Kim Harding, NCDMF

Madi Polera, NCSU

Maria Dunn, NCWRC

John Ellis, USFWS

Chris Stewart, NCDMF

Travis Wilson, NCWRC

Deanna Hardesty, USGS

Sarah Lipkin Sularz, NHC Planning

Jimmy Johnson, DEQ/APNEP

Anjie Ackerman, NC Division of Mitigation Services

Linda Hickok, Duke Energy, Water Resources Team

Julie DeMeester, The Nature Conservancy

Katie Lokey, Kris Bass Engineering

Tony Young, USACE

Mike Wicker, USFWS

Fred Tarver, DEQ-DWR-Basin Planning

Judith Ratcliffe, NC Natural Heritage Program

Dawn York, Moffatt & Nichol

Samantha Morrison, Moffatt & Nichol

Troy Alphin, UNCW Benthic Ecology

Ashley Hatchel, Water Management Section, USACE Wilmington

Dana Sargent, Cape Fear River Watch

Heather Evans, NCWRC

Kat Hoenke, SARP

Howard Schnabolk, NOAA Restoration Center

Ian Rossiter, NOAA Restoration Center

Jim Kapetsky, Independent Researcher

Elizabeth Kountis, NC DWR

Krista McCracken, NOAA Restoration Center

Chance Lambeth, Congressman Rouzer's Office

Melanie Harris, NOAA Fisheries

Colin Mellor, Eastern Regional Team Lead, NCDOT

Greg Dobson, Director of Geospatial Technology, University of North Carolina at Asheville

Rich Carpenter, Cape Fear River Watch

Mike Sanderson, NCDOT Environmental Policy Unit

***Presentation: Cape Fear River Fish Passage and Pulses Update – Julie DeMeester, The Nature Conservancy***

- Combined efforts by TNC North Carolina and the Corps Wilmington District
- Goal is to identify, refine, and implement environmental strategies for Corps water infrastructure.
- Cape Fear used an established SRP process.
- Major themes include floodplains, fish, and water quality issues.
- Launched meeting in 2017 to identify threats and opportunities in the basin.

- Long term goal is to formalize effective e-flows into the Corps normal operating procedures.
- Regarding fish, goal is to send pulses to submerge the locks and dams when the fish are trying to get upstream to spawn (March-early June)
  - 2020 pulse had no monitoring (COVID).
  - 2021 one pulse-monitoring included acoustic telemetry, traditional electrofishing, and eDNA sampling.
  - 2022 monitoring expanded and several pulses attempted, despite dry conditions.
  - Study species include shad, striped bass, sturgeon, and flathead catfish (as of 2023).
  - Collaborators included Corps, TNC, NC WRC, NC DMF, UNC-W, and Clemson.
- Pulse enabling conditions for the fish:
  - Wet weather in the upper basin allows us to “surf the Deep” to send pulses downstream.
  - To submerge LD3: The Deep River is projected to have high flows (~7,000 cfs +).
  - The lake level in Jordan is above guide curve and inflows into Jordan support a large release.
  - The timing allows us to combine Jordan and the Deep to send large pulses downstream.
  - \*LD2 is passable at lower flows, which is a study goal of this season.

*Mike Wicker: Very impressive. Good to have multiple goals. Better environment without negative impact. Good for fish and everyone.*

- How does pulse happen?
  - A week out, watch the upcoming weather forecast for rain.
  - 3 days out, analyze river flows, model options, begin to communicate with researchers and basin users.
  - 1 day out, prep dam operators with the gates to open and close.
  - During the pulse, get on-the-ground info from researchers and the Corps lockmasters and take pictures.
- We passed fish in 2021!
  - We had the weather to accomplish one pulse from March 29-April 6.
  - LD3 and LD2 were submerged. We saw tagged fish pass LD2.
  - The pulse did not last long enough for fish to get over both LD2 and LD3.
  - We went into moderate drought and did not have water for another pulse.

*Dawn York: We could add a page to the Cape Fear River Partnership website for this information and your contact information to be accessible.*

*Julie DeMeester: The Corps owns this work, but having a page with links would be helpful.*

*Mike Wicker: Good idea because that would enhance communication which is needed to implement solutions.*

- We conducted pulses in dry-ish weather in 2022.
  - It was a dry year which limited the opportunities.
  - We successfully submerged LD3 in March.
  - Two other attempts likely submerged LD2 but fell short of submerging LD3.
  - More fish were tagged ahead of pulses, and we saw them pass LD2 and LD3.

- This Summer:
  - We received 2 years of new funding to keep telemetry and eDNA work moving with Clemson, UNC-W, and WRC.
  - The researchers are increasing the number of fish tags deployed and added flathead catfish.
  - The Corps and TNC will continue to refine pulses and protocols.
  - \*Water quality pulses will start in June. We have awesome crew to monitor pulses. More to come in the late Spring.

*Melanie Harris: This pulse work is very exciting!*

*Dana Sargent: You mentioned pulse was successful during wetter times. How long are these pulse times? And are you maxed out in attempts you tried and ways to extend them?*

*Julie DeMeester: Working with amount of water we have. Submerge LD3, which is hard. Goal is to submerge with least amount of water and extend pulse as long as possible. 2-3 days submerge LD as possible. Refine threshold for submerging LD3. Continue smaller rain pulses in the interim to get over LD2.*

*Dawn York: Is there a fish passage/pulse working group that folks can join if they are interested in participating?*

*Julie DeMeester: Will put you on the list when pulse is going to happen. Small group where TNC says they see opportunities and then come back to it.*

*Fred Tarver: Should the target be submerging LD2 given that LD3 is modified for passage? If LD3 is not performing as hoped, surely it does not require total overtopping?*

*Mike Wicker: #1 has the fish passage, not 3.*

*Fritz Rohde: LD1 modified, LD3 is not.*

*Mark Vander Borgh: How do these pulses effect Buckhorn Dam? Concerned about spillover downstream from the Dam.*

*Julie DeMeester: Buckhorn creates a lake, and we sent water, and it goes over Buckhorn, pulses not hurting Buckhorn Dam. In the Summer we must be more thoughtful. We will commit to checking on Buckhorn Dam.*

**Presentation: SARP Barrier Assessment Training in the Lower CFR – Katie Lokey, Kris Bass Engineering**

- We held a two-day training in the Lower CFR on February 14-15, 2023.
  - SARP Crossing Survey Training
    - Inland Culvert Survey Feb 14.
    - Tidal Culvert Survey Feb 15.
  - Training watersheds included Carvers Creek Watershed and Hood/Indian Creek Watershed.

Mark Vander Borgh: What does SARP stand for?

Dawn York: Southeast Aquatic Resources Partnership.

- Groups in attendance included:
  - City of Wilmington
  - NC DEQ
  - NC Parks
  - Moffatt & Nichol
  - Davey Resource Group
- For data collection, we are getting field training and standardizing data collection within the state.
- Once all the data is collected, we will input the data into a map for use.
- Program ranks results for severity of fish passage.
- You should be able to look at the map and see where the surveying took place.
- For questions, please contact:
  - Katie Lokey at [klokey@kbeng.org](mailto:klokey@kbeng.org)
  - SARP contacts:
    - Kat Hoenke at [kat@southeastaquatics.net](mailto:kat@southeastaquatics.net)
    - Shawna Fix at [shawna@southeastaquatics.net](mailto:shawna@southeastaquatics.net)

Kat Hoenke: All of the data feeds our prioritization tool at <https://connectivity.sarpdata.com> and <https://fws.maps.arcgis.com/apps/instant/attachmentviewer/index.html?appid=0e60c1c7da4d469d9cb7fd07aa6dd6af>

Mike Wicker: Suggest pursuing highest priority funding first. Some of the dam research that is going on now, tie together and would distinguish NC from other states. When you submit funding package, tie together broader environmental community.

Mark Vander Borgh: Are you aware of the CFRB Plan being written right now? It comes out in April. Also, would like to know the sites better. Not sure if the presenter is aware of our water quality programs.

Dawn York: It is critical to get fish upstream and understand where more critical watersheds are and how to expand knowledge of anadromous fish present. There is a lot of funding out there.

Julie DeMeester: We are trying to figure out where the fish are getting stuck now and in the future and consider all life stages.

Dawn York: Is there a possibility to replicate training if there is more interest and spread the word? We can also add this to the Partnership website.

**Presentation: AOP Barrier Removal within the Cape Fear River – Colin Mellor, Eastern Regional Team Lead, NCDOT**

- There is a lot of federal money pointed at infrastructure now.
- NCDOT is working to use the money that is programmed. Working on a lot of different fronts.
  - FHWA National Culvert Removal and Replacement and Restoration Program. Submitted at beginning of February 2023 to help anadromous fish passage.

- Working to put together a better interdisciplinary team after hearing presentations here.
- Culvert funding program is significant. \$200 M a year for five years. Looking at project floor of about \$10 K to \$20 M. Annually award 150 to 200 project awards.
- All projects submitted before February were culvert improvements. We submitted six applications for a total of eight culvert locations. We asked for about \$4.6 M. 80% funding and 20% match.
- There is a lot to analyze when we go from a culvert to bridge.
  - Hydraulic modeling at all culvert and bridge locations.
- We did not come close to leveraging the available data.
- We would like to include people on this call to help identify sites and access the data presented today. Want to start working on prioritization list.
- Look at project from a DOT maintenance point of view – which structures need to be replaced.

*Julie DeMeester: Colin, here is a link to remote sensing imagery of what flooded in Hurricanes Matthew and Florence <https://knb.ecoinformatics.org/view/doi:10.5063/F1JM280P>*

*Kat Hoenke: Colin, I will send you an email about the culvert work group. Also, if anyone has culvert projects that are being replaced, please send me coordinates at [kat@southeastaquatics.net](mailto:kat@southeastaquatics.net). We track projects and mileage opened per year by state, etc.*

- If you would like to be included in the DOT working group, let us know.
- DOT has tools that can be used in partner with your tools. Would love to see a prioritization tool.

*Sean Farrell: We had a rudimentary process to put stuff together. We need more data regarding where these upper tributaries have anadromous fish and barrier issues. Looking at culverts that are already in disrepair, challenges when it comes to bigger sites. There is a 20% match when it comes to culvert to bridges, and we must think about project development. There is a benefit to work with others.*

- There are two culvert sites on Hood Creek. Both of these sites had failing headwalls and culverts in disrepair.
- Other sites include Lillington Creek, Embrick Creek, Bong Creek, and Bennett's Creek.
- There is a lot of biological data that we did not access.
- Problems we may have if we go from culvert to bridge, need to raise grade of roadway, means increased impacts. This will be difficult to justify. If we are looking for justification, it would be good to get some backup on that if needed.
- NCDOT provided their spreadsheet of proposed culvert replacement projects with coordinates. It is provided with the minutes.

*Dawn York: Katie, are the Hood Creek sites part of the Lower Cape Fear sites that were already assessed?*

*Katie Lokey: Yes, I believe those were surveyed. They would be in the hydrological report that was put out on Hood Creek.*

*Dawn York: Would like to offer to help coordinate getting resource agencies connected.*

***Presentation: Resilience Assessment for the Cape Fear River Basin and Future Efforts – Greg Dobson, Director of Geospatial Technology, University of North Carolina at Asheville***

- Geospatial coastal resilience assessment for the United States.
  - Companion tool that we built.
  - Coastal resilience assessment funding from NFWF and NOAA.
  - We are in the 7<sup>th</sup> year of the project.
  - First phase of this was completing assessments for East, Gulf, and West Coast of U.S.
  - Then we expanded to island territories, the Caribbean, Pacific, and now the Great Lakes will be released this Spring.
  - We mapped all the U.S. coast lines.
- NFWF and NOAA are committed to supporting programs and projects that build resilience by reducing communities' vulnerability to coastal storms, sea level rise, and flooding events by strengthening natural ecosystems and the habitat they provide.
- Regional Coastal Resilience Assessments
  - Identify areas on the landscape where nature-based solutions may maximize fish and wildlife benefits and human community resilience to flooding threats.
    - Community Exposure Index – Community Assets Exposed to Flood Threats
    - Fish and Wildlife Index – Terrestrial and Aquatic Species of Concern
    - Resilience Hubs – Open Space Areas of Dual Benefit

Dawn York: <https://www.nfwf.org/programs/national-coastal-resilience-fund/national-coastal-resilience-fund-2023-request-proposals>

- Community Exposure Index (Threat + Community Asset):
  - Helps identify where the most people and assets are exposed to flooding threats. Threat inputs are coastal flood related inputs. Red indicates a higher presence in that location. Community inputs do not consider all aspects, just ones that a community would need to get back up following a major storm event.
    - Threat Inputs:
      - ❖ Storm Surge
      - ❖ Sea Level Rise
      - ❖ Flood-prone Areas
      - ❖ Soil Erodibility
      - ❖ Impermeable Soils
      - ❖ Areas of Low Slope
      - ❖ Geologic Stressors
      - ❖ Other Regional Stressors
    - Community Asset Inputs:
      - ❖ Population Density
      - ❖ Critical Facilities
      - ❖ Critical Infrastructure
      - ❖ Social Vulnerability
- Fish and Wildlife Index (Terrestrial + Aquatic/Marine):
  - Helps identify where aquatic and terrestrial species of concern are located.



- Terrestrial Inputs:
      - ❖ Species occurrence and habitat suitability
      - ❖ ESA-Designated Critical Habitat
      - ❖ BirdLife International Important Bird Areas
      - ❖ Other Priority Conservation Areas
    - Aquatic/Marine Inputs:
      - Species occurrence and nearshore habitat extent
      - ESA-Designated Critical Habitat
      - NOAA Essential Fish Habitat
      - Marine Protected Areas
  - Resilience Hubs (Community Exposure Index + Fish and Wildlife Index)
    - Areas of open space where resilience projects may have the greatest potential to benefit both human community resilience and fish and wildlife.
  - Coastal Resilience Evaluation and Siting Tool (CREST)
    - CREST is used to make informed decisions about the siting of coastal restoration and resilience projects. The tool identifies Resilience Hubs, which are areas of open space where projects may have the greatest potential to benefit both human and community resilience and fish and wildlife. Resilience Hubs incorporate multiple indices, all of which are available in CREST.
  - Next Steps:
    - In process of completing U.S. Great Lakes region to release Spring 2023.
    - Update all other regions to incorporate any new or better data and update methodologies for consistency across regions. We want to standardize methodologies across all regions.
    - We are rolling out CREST Version 2 hopefully Summer 2023.
    - New project opportunity:
      - Project idea is to leverage this assessment and understand where the best place for implementing these nature-based solutions is. Our focus is on the Wilmington metropolitan region. There are a lot of hubs in this region.
      - Our idea is to use a public participatory process to work with stakeholders and host a series of workshops to better understand landscape values and map them.
  - For questions, please contact:
    - Greg Dobson at [gdobson@unca.edu](mailto:gdobson@unca.edu)
    - Kristen Byler at [Kristen.byler@nfwf.org](mailto:Kristen.byler@nfwf.org)
    - Bridget Lussier at [bridget.lussier@noaa.gov](mailto:bridget.lussier@noaa.gov)

*Grace Messinger: How do we gain access to the CREST tool?*

*Dawn York: <https://resilientcoasts.org/#Home>*

*Julie DeMeester: Additional TNC advanced modeling work results can be found online and will be published in an academic journal soon.*

- *The base model is complete for an advanced water model for both flooding and water quality.*

- TNC is running a wetland restoration scenario.

**Open Discussion:**

*Rich Carpenter: Any updates from WRC on striped bass above LD1?*

*Jeremy McCargo: Moved the vote for fisheries regulation to special call meeting in March. Did not pass rule, but did not vote to not pass rule either. Recommend pulling rule proposal, which would continue no harvest provision in the Cape Fear. NCWRC Commission Meeting (out of cycle webinar) March 30, 2023, 9am.*

*Howard Schnabolk: Would appreciate getting the group together in person for next meeting. NOAA infra funding and NOFO expected to be out in April timeframe.*

*Dawn York: Thoughts on next meeting timeframe and meeting in person locations?*

*Julie DeMeester: We are doing fish pulses any time we see weather through early June.*

*Jeremy McCargo: Recommend June.*

*Dawn York: Would love feedback on the group and coordinator position and additional efforts that can be done. What more can we do together? Subcommittees? Grant writing? Etc.?*

*Howard Schnabolk: Great idea. It would be good to discuss how coordinator position fits into some outcomes and projects.*

**Meeting Adjourned**