The Sustainable Rivers Program: Cape Fear River, North Carolina

Combined efforts by TNC North Carolina chapter and the Corps Wilmington District

Presented by Julie DeMeester (TNC)

SRP North Carolina Rivers

- Advance (creating e-flow prescriptions) (6,170 river miles)
- Implement (testing e-flows) (940 river miles)
- Incorporate (formalizing Corps' operations) (1,255 river miles)

- Newly proposed (+3,807 river miles; +24 sites)

- The goal of the Sustainable Rivers Program (SRP) is to identify, refine, and implement environmental strategies at Corps water infrastructure.

- The Cape Fear was added in 2016

The Cape Fear used an established SRP process

Launch meeting in 2017 to identify threats and opportunities in the basin.

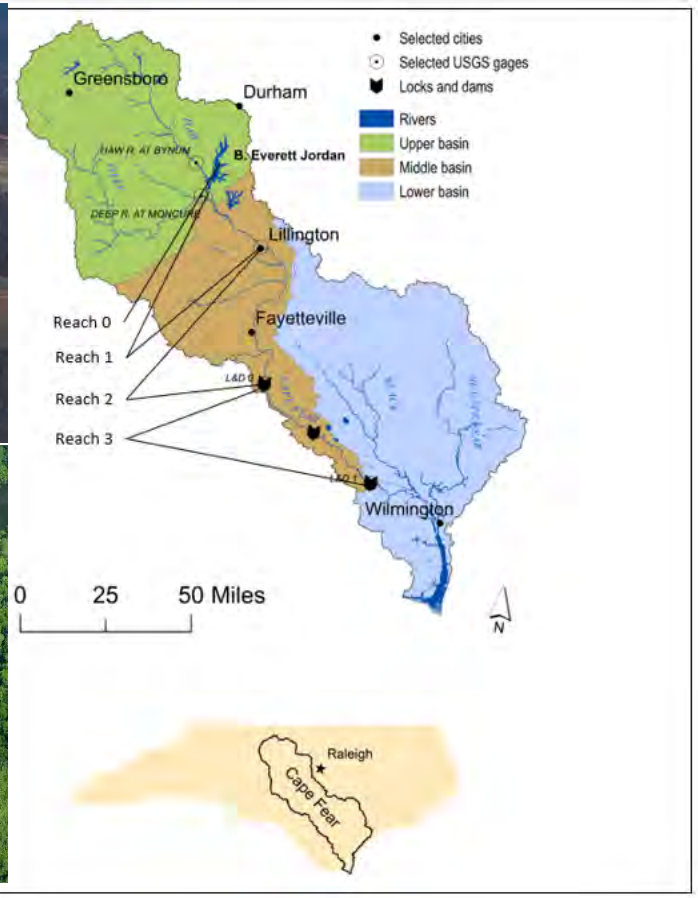
Lit review complete in 2019 to investigate hydrology and ecology, especially for floodplains, water quality and rare fish.

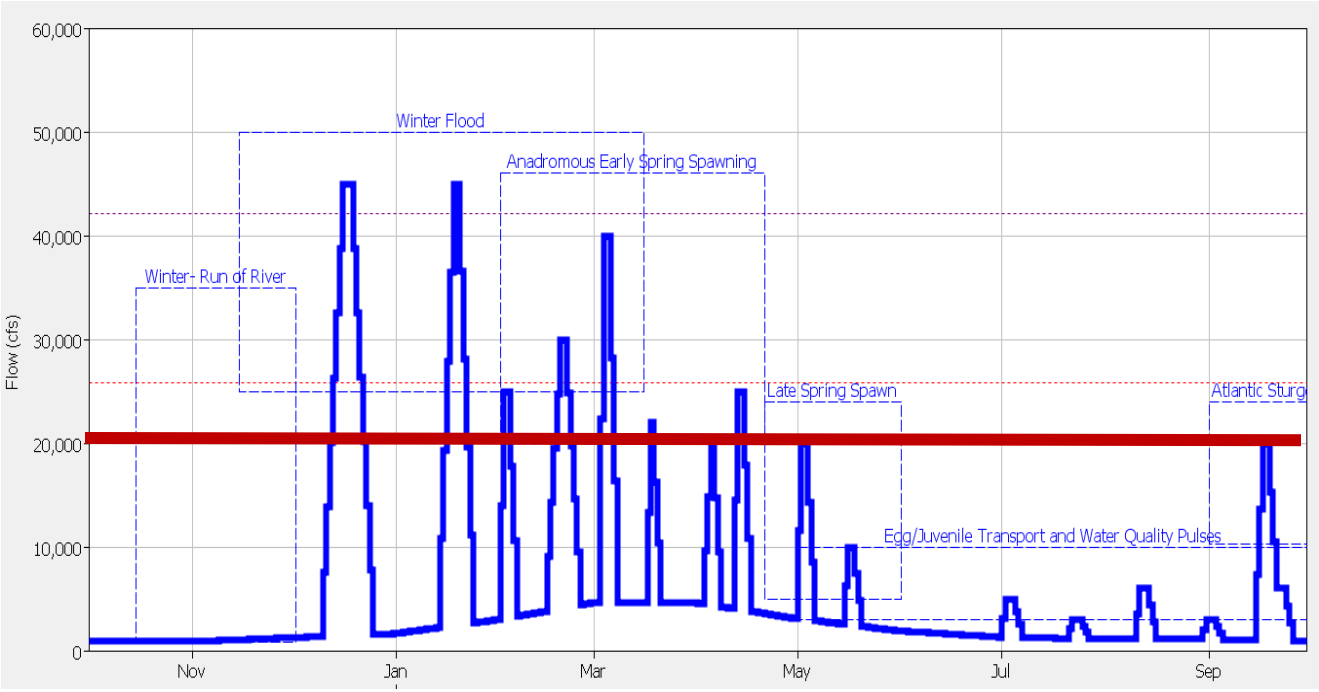
Technical e-flows workshop in 2019 with 45 experts to create flow prescriptions.

Began implementing and studying test pulses in 2020.

Long term goal: Formalize effective e-flows into the Corps' normal operating procedures

Cape Fear E-flow Prescription





From the prescription, the Corps determined they can conduct pulses out of the reservoir to assist diadromous fish and to reduce the potential for algal blooms.

Fish

Goal: Send pulses to submerge the locks and dams when the fish are trying to get upstream to spawn

- 2020 pulse had no monitoring (covid)
- 2021 set up with acoustic telemetry, traditional electrofishing, and eDNA sampling
- March 2021, successful pulse but not long enough for fish to clear all three locks and dams. Not enough rain for more pulses.

Collaborators: Corps, TNC, NC WRC, NC DMF, UNC-W, Clemson

Fish 2022

-Expanded telemetry work

-Expanded eDNA sampling locations

-Conducted our first pulse starting March 10

-Working with lock masters and WRC to do “valve” conservation locking at LD3

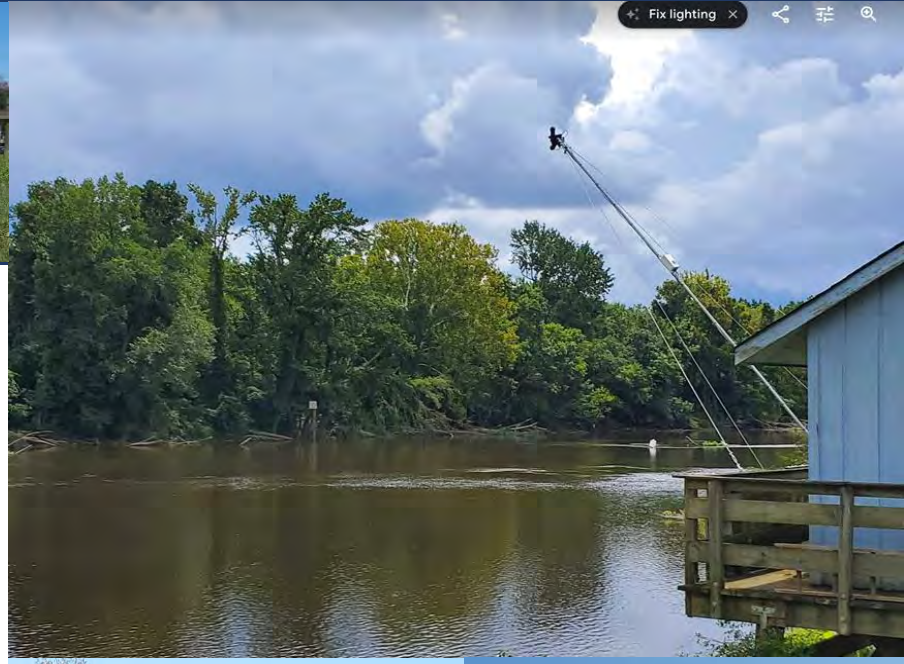
Collaborators: Corps, TNC, NC WRC, NC DMF, UNC-W, Clemson

Pre-pulse LD3

3/14/22: pulse LD3

3/14/22: pulse LD2

Water Quality



Goal: Send pulses to mix the water column in warm, low flow months to reduce the potential for harmful algal blooms.

- 2020 multiple pulses accomplished. Monitored with remote sensing equipment, real-time sensors, autonomous underwater vehicle runs, gages, and more. Focus was near LD1.

- 2021 pulses occurred with all monitoring equipment still in place and expanded upstream to the confluence. Pulses out of the dam were limited by drought.

Collaborators: Corps, TNC, USGS, Gybe technologies, UNC-Ch, Brunswick Drinking Water Utility, more

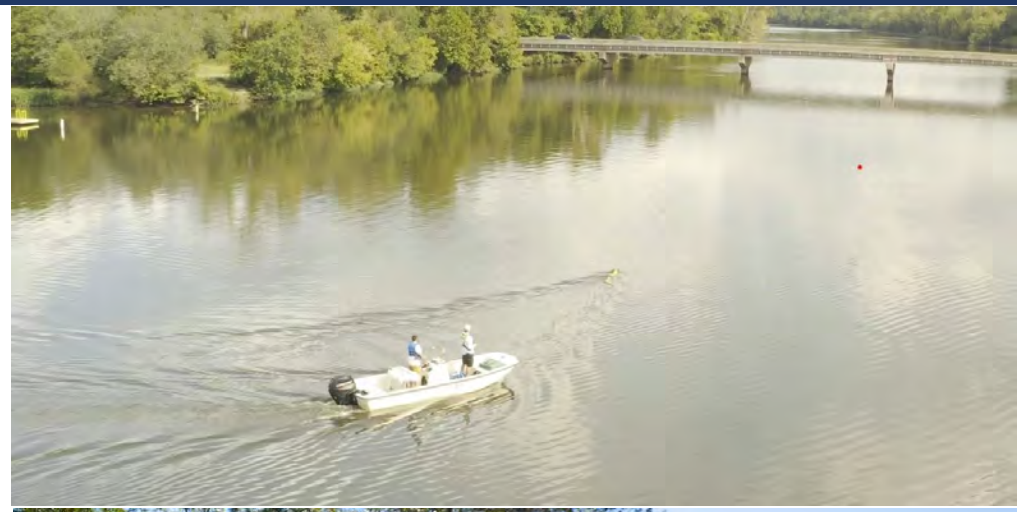
Water Quality 2022

-Research partners are prepping

-Expanding to more monitoring near the confluence and plans to do AUV runs in Jordan Lake.

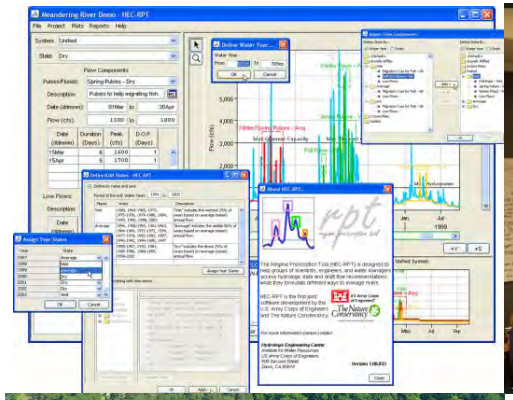
-A grant added conductance and turbidity real-time sensors at Lillington USGS gage (coming online soon)

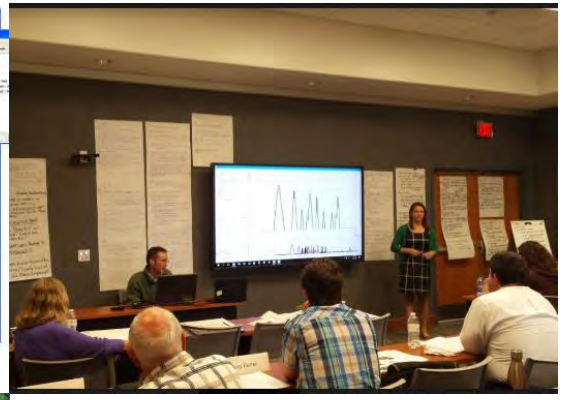
Collaborators: Corps, TNC, USGS, Gybe technologies, UNC-Ch, Brunswick Drinking Water Utility, more

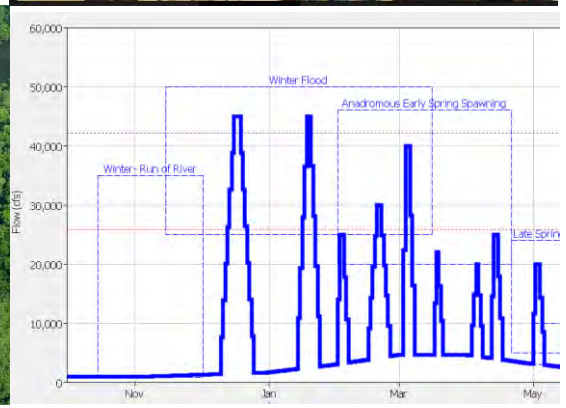


Next steps

- Evaluate pulse effectiveness, refine pulses and protocols
- Re-engage stakeholders to share results
- Long-term goal: Find a way to incorporate e-flows into the normal operations







Thank you!

Questions?

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