

DFRTAC Meeting

12/13/2023

Meeting Minutes

Ben Eberline	Bjorn Lake	Jesus Morales
Corey Chamberlin	Bob Graham	Chris Smith
Paul Vidonic	Carlos Lozano	Scott Smith
Ben Rice	Chris Manhard	Susan Gonzalez
Taylor Allen	John Ellis	Alan Weaver
Justin Krebs	Fritz Rohde	Holly White
David Belkowski	John Swenarton	Wilson Laney
Kirk Rundle	Deon T Kerr	Fritz. Hoogakker
Dan Michaelson	Kevin Mack	
Jeremy McCargo	Todd Mathes	

Ben Eberline started the meeting with introductions and encouraged open communication during the meeting.

Wilson noted a workshop in January for a grant from NC state to hydrologic model the RR in response to climate change. Ben has the proposal and can circulate. Diadromous fish and riparian forest focus.

Ben introduced the agenda, upstream in the morning then downstream after, with bypass flows after lunch.

Gaston eel distribution –

The eel wand was replaced. Eel catch has been consistent. Seem to be distributing in Summit Creek. Caught eels into November this year due to delays in field work due to sickness, etc.

Corey asked about the tag information. The eel tags have been pulled from those eels that had them. We have the tag date so we can possibly get some growth data. There are a few batch codes that are incomplete, so we have some grey area.

Bob asked when passage started at Gaston. 2018. The growth of recent Summit Creek eel collections seems a little high maybe but in the ballpark. Maybe bait bucket introductions. Bob talked with the striper fishing groups in the past, and they shared eels were not the preferred bait. These larger eels could have gotten around the dam on their own. Justin was curious about a smaller tributary that could allow the eels to access the lake. Ben R. didn't think there was a path due to the narrowness of the waterway. Wilson added there is a water supply reservoir that discharges in the south or north fork of the Roanoke but also needs to go through a water processing facility. Wilson also mentioned some VT

work by Obermeyer that suggested in was unlikely the eels could find a passage. Scott Smith added that that passage into Gaston from this reservoir is highly improbable.

Ben E. added that they are not falling back and distributing overall and we are meeting the license requirement. Ben E. thinks we have checked this box in the smaller Summit watershed. Where do we go from here? Ben suggested pots as a good method to assess the larger Gaston Lake area and proposed one day of trapping each month. Asked the group what their thoughts were. Justin asked, why only one day for eel pots and suggested the RR method of two to three days. Ben agreed and clarified that is what he meant: once a month, overnight soaks, 2-3 days total each month. Todd suggested we deploy a pot just downstream of Kerr and see what comes there, is it time to go all the way upstream to Kerr?

Taylor added we could use the RR timescale to estimate.

Justin added we could use the similar methods to RR to focus on a smaller scale comparable to that of RR but in the lower Lake Gaston area.

Corey suggested pots at boat ramps around Gaston in stepwise fashion to track movement.

Wilson agrees with Todd, we should approach USCOE. Also agrees with using RR timescale.

Bob thinks pots would be useful near the boat ramps if want to try them with minor effort. He also likes the lower lake focus. Would like to hear from NC WRC on their electro fishing (EF) efforts and could note eel captures.

Kirk added they will be sampling every spring for several years. NCWRC is willing to catch and wand anything they see. Kirk will try and find a wand to borrow and be ready for tags.

Carlos suggested a stationary pit tag reader. Dan and Justin added we would need a pinch point and maybe hard to do outside of all the way up lake.

Taylor asked what question we are trying to answer. What's the license requirement? Is it similar to RR requirement? The purpose in Deep Creek was to gauge if the eels would distribute in a somewhat natural manner. Have we already shown that the eels are distributing in Summit Creek and is it on ACOE to monitor for approach at Kerr.

Wilson added we need to know distribution and passage needs at Kerr.

Kevin Mack would like to clarify methodology; do we need to monitor within the area of the lake.

Wilson added the work Kirk is doing would help and maybe a chronological expansion of pots to gauge the movement. Maybe a couple lake zones over time.

Ben E. asked if we could stop EF in summit creek now. Fritz agreed we can stop the EF effort in Summit Creek.

Ben E. would like EF sites from NCWRC and bathy data to make sure the methods/efforts are similar during the move.

Fritz stated there are boats ramps next to two of the bridges which could be used to set pots, according to Google earth.

Bob added that Kirk mentioned Big Stonehouse Creek is there next EF location and could be a good location to start, since it is 3-4 creeks west of Summit.

Kirk added they would hit many major tributaries during their spring EF efforts annually for the next few years. Kirk will provide general sampling locations to Ben E.

Kirk added the Summit Creek boat ramp will be redone. It appears now that this work is going to start next winter, hopefully construction will begin in December 2024.

Dan added we should get the ACOE involved now. They have not participated in the DFRTAC in 10 years.

Jeremy added ACOE passage system would have to be permitted to be built. Possibly by another party.

Fritz R. has discussed Kerr passage with other resource agencies. Specifically, starting the passage conversation with ACOE and will have more in April to report. Dan thinks this is very important due to the size of the watershed above Kerr, and the huge growth potential for the eel.

RR eel passage-

Ben E. introduced the latest data from upstream passage numbers at RR.

The RR and Gaston eelways shut down Dec. 1st.

Kevin asked why 2020-2022 numbers were so low.

Ben added the skimmer gate was in outage and was replaced.

Ben introduced the average RR catch numbers by month in 2023. Also introduced a graph showing the change of percentage in total catch by week since 2010. The bimodal distribution shows that a very small number of eels are passing during the summertime.

Dan asked would the mortality be an issue in the summer. Corey added that most mortality is associated with high numbers of eels in the tank.

Fritz R. suggested the eelways could be checked only once a week, as opposed to three. However, to avoid stress to the eels the number of days sampled each week would need to be reduced accordingly.

Jeremy added the eels would stick around and be ready to move when the eelways come back on.

Ben added the effort could be shifted the eel potting in Gaston during the summer months when success is greatest.

Todd added that the data should drive the decision, do we need CPUE? He used the data for other efforts like stock assessment. It is useful to them and should be considered in the decision.

Kevin agrees with Todd, the low numbers are still useful, but understands ops are expensive. Maybe check the numbers and make sure the small bars are not representing a lot of eels.

Wilson added that genetics could be of interest. Are the eels genetically predisposed to move during the summer months with warmer temperature. Could we be genetically selecting by accident? Agrees with Fritz that a reduction in days could be the best option.

Ben added he wanted to start the conversation and will look at water temperatures to focus the discussion.

Jeremy suggested we add the weeks in the graph to help with interpretation.

Kevin would like to add temperature and flow(bypass/river) to the decision.

Jeremy agrees, the river flows are important variable.

Bjorn added we can also look at past mortality timing to inform decision.

Ben introduced the Gaston upstream numbers. 5,694 total in 2023. Eelways are working well, are effective. We did not see the same bimodal collection distribution at Gaston.

Fritz asked about the collection peaks at Gaston. The timing is interesting and a few weeks after RR collection peaks.

Ben introduced the size of eels for Gaston eelways. Eels size appears to be increasing.

Kevin added it may be time for stats because the graph maybe deceiving. Todd noted potential outlier effects.

Jeremy added it may be the outliers over the last two years or a function of sample size.

Justin and Carlos started to introduce the habitat and population data for RR. Three years into the habitat and population data collection. Four years of outmigration data. The data have been summarized into the manuscript that will be submitted for peer review.

Carlos introduced the study, habitat types and methods. The four-year study, 1566 traps deployed 2020-23. Used zero inflated negative binomial mixed model. Results, CPUE was highest at offshore habitats, higher during warmer months, and temperature not a significant effect in the model. Probability of catching 1 or more eels was higher when bottom temps were above 15C. Mean eel length was 510 mm. 92% ≥ 400 mm, 10% ≥ 600 mm. No significant difference in TL between habitat strata and lake zones.

Carlos introduced the population results. 2022-23 est. 2986 (CI 1305 to 10363). Last year was about 4000, and the prior year was around 3000. Variation suggests eels are leaving each year.

Bjorn asked if the length distribution was looked at over the years, Carlos has not.

Corey asked Carlos to confirm that the population range is for out migrating size eels. Carlos confirmed.

Chris introduced the outmigration model.

Bjorn asked about temperature location, Carlos stated the temperatures were recorded at bottom.

Alan Weaver asked if the larger eels would be considered silver eels? What was the cut off? Carlos and Ben added that we did notice one or two that appeared to be silvers with larger eyes but did not include in the analysis. Justin added the saltwater introduction is what drives that change to silver.

Carlos added that the traps were baited, and feeding is important to catchability.

Kirk thought the work was very interesting and asked if there were any thoughts on seemingly low population estimates for RRL?

Bob G added that a lot of animals work on building up fat reserves in the fall so may be a catch factor outside of movement downstream. Also, the mesh size was important in catching larger eels. Also, there may be a size requirement to movement and larger eels may stay put once reaching a certain size.

Bob G. added the eels in deep creek went up to the Johnson Pond but noted it's a dead end.

Justin added it maybe predation or competition for resources.

Ben added natural mortality.

Wilson added that the point is to restore the eels' function to the system which includes being prey. Also, to add the upstream passage numbers and the population estimates and come up with a natural mortality estimate.

Bob added the age data would be important and Wilson added he is still reaching out to Jesse Fisher for that data at NC state.

Ben E. asked if population data is something we want to continue collecting. Carlos added it would be helpful for natural mortality.

Justin added he would not like to focus the pot effort any further during the year, it was already reduced from 12 months.

Chris Manhard introduced the outmigration model. Acoustic telemetry study. 35 of 70 tagged eels have been detected downstream, 21 at Albemarle Sound. 140 miles with migration time ranging from 4 days to 2 months, with mean transit rate of 18 miles/day. Generalized Linear Model, n=33. Fall of 2019 to spring of 2023. Eels most likely to out migrate at night during rain events. Eels most likely to out migrate during declining lake level. Study will continue with 23 eels still at large. Final model will be based on 5 years of data and 70 eels. Manuscript has been drafted and will be submitted to transactions of AFS in January 2024.

Jeremy added we should check the ocean receivers for tags, Justin will investigate that.

Update: Justin did investigate. "The best way to do this would be for Dominion to get a login to the MATOS network database and enter the acoustic tags that have been deployed as part of the downstream tracking effort for Rapids. Then you could query the network database for any detections of those tags on other researchers' receivers."

Todd asked if we are still asking for river receiver data, Ben E. confirmed. Todd added the MATOS (ACT network) System is being updated from managers around the area. We could join the network if possible and Ben E. will check on that.

Bob G. asked if the eels leave solo or together? Chris added there are singles and groups of outmigrants that move within a few days. The eels ping in the lake before leaving but no staging seen around the dam.

Wilson added that there are other researchers out there and should be approached for additional eel data. Wilson recently found receivers in duck NC that provided useful data for sturgeon.

Justin added they may be part of the MATOS network.

Update: AKRF is a member of the network but don't currently have any active tagging projects in the database.

Fritz added that he remembers the outage during the first year of study and do we know what happened to the eels that left during that event. specifically, are there any mortality links?

Ben E. added we can't link to turbine mortality. Unsure.

The predictive model could be run a year early, year 4, and year 5 data could be used to validate the model. Many agree this would be very interesting.

Bjorn asked if the receivers have been tested for detection efficiency.

Ben E. asked for clarification and explained the original range testing effort at transceiver install, Bjorn added that some models require this certification.

Lunch break.

Fritz asked if NOAA could get telemetry data to better assess local movement over the dam and mortality. AKRF agreed to share the data.

Anadromous fish and bypass flows-

Fritz H. has joined the meeting, Fritz R. disagrees with the addition of more Fritz.

Ben E. introduced where we are heading with the bypass flow decision. The third season of 1000 cfs and ichthyoplankton/EF sampling with freshet. The movement of flows to 1000 CFS does not seem to have paid off as much as the move from 500-750 cfs. Ben introduced graphs of adult fish CPUE and Flow scenarios.

Ben E. showed a focused Am. Shad graph.

There may be some effect from the high flows on CPUE. The population has declined in the river and the graph is showing an increase in CPUE in the bypassed reach.

Ben E. will set up a subcommittee for Bypass Flows.

Fritz H. suggested a model of data to assist with decision making.

Bjorn wants the flows added to the graphs. Is it harder to catch Am. Shad at higher flows?

Wilson added higher flows could also affect the behavior of the fish and the sampling protocol (i.e., interruption of north gate spill).

Corey added the same techniques used at all the flows. Bob G said it wasn't an issue at 500 cfs.

Ben will loop in Tom G. (ABMS – Eelway operations contractor) on the subcommittee to get his insight.

Kevin would want to include another bypass resident fish sample at 1000 cfs. Mussel numbers increased last survey.

Ben agreed that it would be important to see that through.

Corey covered the flow schedule they develop every year.

Ben E. asked if we want any changes to the flow for next year.

John E. wants to maintain current flow schedule until bypassed resident fish work complete.

Bob G. suggested we revisit after the data are synthesized for more discussion.

Mussel survey occurs every 7 years and fish every 5. Next mussel work is 2028, fish in 2026.

Ben E. asked the if the mussel abundance is a factor of flow and Bob G. added its probably time under water.

Wilson noted the mussel increase would relate to the host fish being present.

Fritz H. noted studies have shown that abundance does not have as large of an impact on mussel abundance. Presence/absence obviously does.

Ben E. will pull together the subcommittee and revisit later.

Shad Trap and Transport -

Ben brings up T&T of shad upstream. We have suspended the work but would like to revisit for our annual agreement on suspension for next year.

Jeremy added the last few years of Am. Shad abundance remain low. Not sure if stocking or lack thereof is responsible for the lower abundance. They can't get out of Kerr if transported.

Fritz R. added that NOAAs agrees with suspension of shad T&T at RR in 2024. John E. agrees.

Jeremy does not plan to stock in 2024 and plans to revisit the plan to stock after 2024.

FFT updates and discussion –

Ben E. introduces the current situation with FFT project. FERC manufacture selection was delayed until Feb. 24, 2024. No response from FERC yet. Executive review ongoing. Dominion attended Natel site visit in November 2023. The sample test was interesting, 900 rpm, same tip speed as RR. Natel working on another publication of with another test of 120 eels at matching RR tip speed. 100% immediate survival, 99.2% 48-hour eel survival observed at 28.2 m/s tip speed (RR tip speed). The turbine creates an air bubble on the edge of turbine and pushes the eel out of the way. Not just reducing severity of strike but strike all together.

Justin asked if the turbine would scale up?

Ben R. added that this is going to be the first turbine of its kind at this scale. The SCC will be interested in the cost of the turbine in VA and NC. Ben was able to show that the turbine would be worth it for operational and financial reasons. It avoids costly nightly shutdowns. Ben would like to make clear how novel the installation could be, and he would like the DFRTAC to appreciate how important this effort has been for us, and the world. We have been granted approval by the Capital Review Committee and but it will need to go to our SVP for approval and up the chain to the president of the company. It's going to be a very large project. The project is broken up into a limited notice to proceed and a full notice to proceed. We will have an off ramp during the limited notice to proceed to withdrawal from the project.

Todd M. asked about any additional fish testing preformed, Shad?

Ben E. and Ben R. agreed that the survival rates are similarly impressive for other fish species' passage. Natel is aiming for survival of all aquatic life with the development of the turbine. Other facilities are looking to the technology for installs.

Ben E. thanked Bjorn for his efforts to help Natel with study set up.

Bjorn added he also visited the facility and was impressed with the turbine test and subsequent survival.

Bjorn commended Dominion for the effort to pursue this technology.

Wilson asked if the eels were examined for internal injury after test.

Ben E. said they do behavior studies and x-ray for internal injuries.

Jeremy asked if performance would change.

Ben R. added it has potential to increase output but the turbine was designed to maintain current RR load capability for license reasons.

Corey added the license would need to be reopened if the capacity was increased a certain amount.

Fritz R. asked about installation schedule.

Ben R. added we have money in 2028 but would like to achieve original the 2027 timeframe. Corey agreed that it's possible to meet the 2027 schedule if everything goes as planned.