

**Roanoke Rapids and Gaston Hydropower Project
American Eel and American Shad Working Group Meetings**

14 March 2019

Meeting Minutes

Present:

Dominion – Peter Sturke, Corey Chamberlain, Bob Graham, Taylor Allen, Karen Canody
NMFS – Fritz Rohde, Twyla Cheatwood
USFWS – John Ellis, Wilson Laney (Phone)
NCWRC – Jeremy McCargo, Kirk Rundle, Clint Morgeson
NCDMF – Todd Mathes, Holly White (Phone)
VDGIF – Dan Michaelson
NCSU – Jesse Fischer (Phone)

Agenda Items

- American Shad Working Group
 - Dominion Bypass Anadromous Fish Sampling update from 2018
 - Other members updates (if any)
- American Eel Working Group
 - 2019 Upstream Passage
 - Roanoke Rapids
 - Stocking Locations and allocations
 - Gaston
 - Tag all captured and release at Rec Area
 - Upstream Gaston
 - Engineering Design schedule and plans
 - Lake Gaston Distribution Study
 - Downstream Roanoke Rapids
 - Alden Reports
 - 2019-2021 Study design

Meeting began with a safety message with concern about tripping hazards in the room due to computers being plugged in as well as walking hazards on the eelway tour which will occur after lunch. Several station specific safety items were discussed and will be discussed again prior to going onto the dam. DFRTAC members introduced themselves and the meeting officially began with Shad discussions

American Shad Working Group

Dominion Update

- **Bypass Receivers**

It was noted that when Dominion Energy Biology checked the receivers in January of 2019 that 4 of the 6 receivers were present however IT issues prevented downloading the receiver data. The 2 receivers in the tailrace were missing due to the cabling having been sheared off. The data in the remaining receivers will be downloaded and batteries replaced in late March. Two new receivers are being purchased by Dominion. These receivers will contain tags that will allow them to be located if lost.

- **Bypass Anadromous Fish Sampling Update from 2018**

Pete noted that all ichthyoplankton collections occurred at the lower bypass collection station (C1 and C2). None were collected at station A (directly below the Dam). There were a few collections that were cancelled due to weather or operational conditions that were deemed unsafe. The empty cells in the table represent zero catch rather than a lack of sample collection. Slide 6 represented average annual Catch Per Unit effort of Ichthyoplankton samples in the Bypass Reach from 2010 to 2018 with the flows as grey bars in the background. Catch of American Shad was down from 2017 however it looks very similar to 2016 efforts during 750cfs flows. Wilson noted that it would be great to see these data represented as an annual time series compared to the larger time series of between year sampling. Peter noted that will likely be part of the analysis for the 2020 FERC report. Jeremy noted that he would expect to see more Hickory Shad this year considering the flow regime recently.

The next summary slides were a table and figure depicting Electrofishing Data from below Roanoke Rapids Dam in the Bypass Reach. Catch per unit effort for Stripers was elevated again though not as high as in 2017. American Shad CPUE was very similar to 2016 and 2017 (both years during 750 base flows). River Herring CPUE values have been low from 2016-2018. Slide 9 depicted Adult American Shad CPUE in the Bypassed reach from 2010-2018 and it was noted that the consistent weeks for CPUE of American Shad was week 13-19 or Late March to Early May. This may lead to sampling design changes for the next study period of 2020-2024.

There was further discussion about sampling efforts in the bypass after Pete brought up that 2019 is the final year of this study period (2015-2019 with a report due to FERC in June 2020). Corey discussed how the next bypass anadromous flow increase will occur in 2021 to 1000cfs as we will maintain 750cfs flows as stated in the license for 5 years. That increase will only occur if the DFRTAC has not agreed to a bypass anadromous flow regime. Working in the bypass is challenging and difficult to achieve a true representative picture of what is going on in the river from year to year considering the annual variability of water conditions. To compound the complexity, the NCWRC has had varying success with their American Shad stocking efforts which resulted in variable amounts of fry stocked within Roanoke Rapids Lake or below the Dam at Weldon. Wilson said it may be good to include an analysis of the last three years compared to previous flow regimes and determine if there's a statistically significant result from increasing the flows. Jeremy expressed that those analyses may be very difficult to tease out considering the number of variables in the equation from year to year. Pete concluded the bypass discussion for now with the idea that more conversations will be occurring throughout the year as we move into the 2020 sampling season and those sampling designs need to be determined.

NCWRC Update

- **Shad Genetics Report**

Jeremy noted that 71.3% of American Shad collected in 2018 were hatchery origin fish (the highest seen so far). 2.2% of the catch in the Albemarle Sounds were hatchery origin. Fritz noted that is possibly because the majority of the Shad that have been tagged moved up the Chowan instead of the Roanoke. Jeremy followed with information that in 2018 Juvenile sampling, 63 Juveniles were tested and 3 were hatchery fish. Jeremy noted that he has been in contact with a researcher on the Hudson River to get an expanded genetic suite of analyses to determine the origin of American Shad and if they conduct natal homing. It was noted that the American Shad from the Mid Atlantic do not become genetically differentiated until you reach the Cape Fear River further south. A larger marker suite of analyses may potentially help identify unique stocks. Jeremy reminded the DFRTAC that the NCWRC will not be stocking American Shad in the Roanoke River in 2019. Dan Michaelson expressed curiosity in stocking amounts vs flows experienced. Jeremy replied that the amount of fish caught in the bypass should

reflect population stock regardless of stocking efforts. Pete noted that the stocking effects of higher hatchery yield years should be seen in the coming years.

NCDMF Update

- **Tagging Efforts in Albemarle**

Holly White said they began tagging in mid-February and have put out 5 tags so far this season until the commercial season opened up. Weather was a large determining factor in sampling early this season and they hope to get the remaining tags out after 24 March 2019 when the commercial season closes. She noted that they are seeing spent Alewives in some larval tow collections and will update the DFRTAC with any developments on their tagging progress for 2019. Wilson asked if NOAA is still on track for a May report and Fritz agreed with Holly that it should be around 15 May 2019. Wilson also noted that there should be a new stocking assessment coming along from ASMFC this year for American Shad.

American Eel Working Group

NCSU – Eel Update

- **Dr. Jesse Fischer**

Jesse discussed on the phone that the age and growth eel report is being finalized and will be sent around when possible. There is an observed increase of the swimbladder nematode (*A. crassus*) in Roanoke Rapids Lake vs. Roanoke River below the Dam however the increase is small. Eels with the greatest parasite load were from the Gaston Trap eels (Roanoke Rapids Lake). Jesse acknowledged that it may be food related due to an increase parasite load within the reservoir. Wilson asked about the zooplankton collection to look for *A. crassus* within the lakes. Bob asked Jesse about the larger eels for this study and if they are seeing any signs of silvering especially from the gonads? Jesse said that they may be able to look at the female ovaries and complete some analyses that other studies have shown to be promising. Jesse noted that eels within the reservoir seem to grow faster which could lead to earlier silvering. Peter asked about non-lethal metrics for determining silvering eels when capturing them. Jesse said that we could look at the eye dimensions, development of the lateral line, mouth and other external characteristics until we can build up confidence to suggest at what length they may be silvering for outmigration. Some evidence suggests 400mm but some are not sexually mature and some are at those lengths. Females appear to grow faster.

Dominion Eel Update

- **Upstream Eel Passage**

Pete noted that the North, South and Tailrace eelways at Roanoke Rapids are operational and have been since 26 February 2019. He opened the discussion about whether or not we should continue splitting the upstream releases of eels to the headpond (Roanoke Rapids Lake) and Deep Creek (Tributary). John asked what the intent was at the beginning of the sampling and Bob mentioned that it was to determine where they were going after being transported upstream and that several studies that we have completed (PNNL) showed that they do continue to move upstream. The problem with the study is that we do not know their final destination and that Johnson Pond has not been explored yet. Pete noted that access is looking promising and will follow up with the group if it is granted. Jeremy, Kirk, and Clint offered their assistance in gaining access if need be. Wilson and Fritz agreed that we would like to see what is in the pond and would like to continue releasing eels into Deep Creek until we determine what is in the 16 acre impoundment upstream. Wilson noted that we could potentially use that as a location to catch outmigrating silvers or capture them with eel pots if they are foraging. Corey asked if maintaining the releases in Deep Creek would go against the “let the eels choose their path” mentality of upstream passage? Wilson said that is a valid point however we do not know how much available habitat exists or is habitable upstream of the release point until we can sample Johnson Pond. Todd mentioned that he

has seen smaller ponds hold hundreds of thousands of glass eels so the habitat may not be limiting at all at 16 acres. **DFRTAC agreed to continue 50/50 split of releases until we can determine what is swimming in Johnson Pond.**

Pete continued the upstream eel passage conversation with discussion about the Gaston Traps. The North and South Trap at Gaston Dam are not currently operational. The North Trap has been inaccessible due to station outage and flood gate operations while access to the South Trap pump has been difficult due to conditions present at the site. The station is working to repair these as soon as possible and operation will resume. As for the processing of eels trapped at the Gaston Eel Traps in 2019, all will be tagged with Coded Wire Tags (CWTs) and released at the upstream Rec Area. The eels will be anesthetized with AQUI-S 20E as in 2018 in agreement with USFWS and under new FDA guidelines the hold time in each treatment will be limited to 15 minutes. Eels will be tagged and released into the recovery tank and any not tagged within that timeframe will be released untagged. Records will be kept of all tagged and untagged eels.

- **Upstream Eel Passage at Gaston (Eel Trap Engineering Design)**

Pete started this section talking about the consultant that will be designing the eel traps at Gaston Dam. The traps to be designed are a New North Trap on the northern side of the training wall below the dam and design modifications/improvements to the current South Trap. They will design these in a stepwise fashion and will seek USFWS and NMFS fishway engineers review at the 60 and 90% review period prior to submittal to FERC. Fritz noted that Dominion should contact and include Bjorn Lake on communications going forward. John Ellis and Wilson noted that they will be in touch with their South East region to let them know the schedule and make arrangements for budgeting for the engineering review in 2019. Pete noted that the Ready For Construction (RFC) package will hopefully be ready for construction Supply Chain by Q4 2019. Consultant will be completing Record Drawings after construction in complete in 2020.

- **Upstream of Gaston Dam Distribution Study**

There is a FERC requirement once upstream passage is established above Gaston Dam to complete upstream distribution studies. For these studies, the licensee is required to monitor tributary distributions and Dominion has scouted a few of the major and accessible tributaries to Lake Gaston. Based on previous discussions with the AEWG, Dominion showed preference for release sites further downstream considering the multitude of tributaries available in Lake Gaston to empower the eels decision to move upstream. Dominion initially suggested Six Pound Creek for access reasons and perhaps the benefit of having a good restriction where it may be possible to catch Silver Eels on their outmigration in years to come. Pete also noted that there were other tributaries they have not had time to vet however plan to in the near future. Kirk asked if Dominion had investigated Summit Creek or the nearby tributaries and Pete confirmed they had not but they planned to. Todd suggested that we use 2019 as a baseline for eel distribution in whichever tributary is selected. Pete indicated that was his intent with bringing up this subject now in order to adequately familiarize the group before seeking input this summer for a proposed study plan for submittal to FERC. The conversation ended with a note that Dominion will investigate other options for tributary sampling and will seek to learn as much as possible from the Deep Creek studies on Roanoke Rapids. Additionally, considering upstream passage will be officially established in 2020, Dominion intends to complete background sampling in 2019 with the studies beginning in 2020 with the first report due in 2023.

- **Downstream Passage at Roanoke Rapids Dam**

Pete brought up the topic of Downstream Passage at Roanoke Rapids Dam for American Eels and wanted to give the group an update on the Alden Survival Study. As previously stated in the Alden

Reports, the estimated turbine survival ranged from 46-88% with total project survival at Roanoke Rapids Dam being 74% conceptually. In the previous meeting, the AEWG expressed interest in the feasibility of a Fish Friendly Turbine at Roanoke Rapids and Dominion intended to answer that question in the coming months. Dominion updated the AEWG with the developments from the final Alden Turbine Feasibility Report in which Alden determined that a fish friendly Alden turbine is conceptually feasible at Roanoke Rapids Power Station. This option still needs Dominion Engineering review and turbine and station specific engineering feasibility studies to fully grasp the possibilities. Pete presented the options that were investigated in the report: Option 1 replaced the current turbine with an Alden runner and matched the speed to the existing generator, Option 2 replaced the current turbine with an optimized runner and used the existing generator, Option 3 replaced both the turbine and generator. Option 2 was further split into two separate options; one with a nightly shutdown of remaining existing turbines and the other with no nightly shutdowns. Ultimately option 2 with a nightly shutdown of remaining units was conceptually able to meet the 95% threshold for survival of downstream migrating eels that was discussed in the December 2018 AEWG meeting however Dominion expressed concern over the Alden Turbine not being deployed in a field setting yet. Dominion also displayed the very high level conceptual costs of each option (-50 to +100% estimates) to give the AEWG an idea of the potential impacts to power generation, hydraulic capacity, and ultimately cost. Wilson and John Ellis wanted to confirm that these costs are proprietary to Dominion. Pete and Corey confirmed and reiterated how high level these cost estimates are at this point. Wilson and Jeremy commented that option 2 with the nightly shutdown seems to be the best option to pursue at this time. AEWG seemed to agree however Pete and Corey commented that Dominion will have to look into this option more in depth because we will need to maintain operational flexibility as Dominion turns more towards solar and other renewable generation sources. Corey also stated that according to Dominion engineers, the current turbines are in good condition and there is no plan to replace them in the current 5 year plan. Pete said he will keep the AEWG in the loop for any future developments as they arise as they relate to the condition and schedule for any replacement of turbines.

Pete changed topics to the downstream eel study period of 2019-2022 and reminded the AEWG of the questions at hand. The AEWG needs to understand the Adult Eel length frequency in Roanoke Rapids Lake in addition to the Timing of outmigration from Roanoke Rapids Lake. He brought up how in the Approved Article 401 schedule this February 2019 FERC requested annual updates in June on the study therefore Dominion has started working on the study design. The path forward at this time is to have Dominion lead the field effort to begin to determine the adult eel length frequency in Roanoke Rapids Lake (to include Johnson Pond), purchase the infrastructure needed for a downstream tracking study, as well as hire a consultant to provide study design, oversight and data analysis for annual reports. The plan is to provide FERC a conceptual study design by June 2019 and upon further consultation with the AEWG, the plan will be finalized and enacted from 2019-2022. Wilson asked if Dominion intends to use eel pots, Bob and Pete said yes but bait needs to be determined. Todd said that Horseshoe crabs are still a bait and could be used however crayfish may work as well. Wilson stated if we could use Red Swamp Crayfish we could use an invasive creature for a benefit.

Wrap Up

Pete wrapped up the meeting by asking the group their preference for engineering review, report reviews, study design reviews, etc. Fritz and the group commented that a phone call should suffice. Jeremy asked Kirk if he could set an eel pot with his trap nets on Lake Gaston. Kirk said he could if he had some. Pete and Bob commented that they have plenty left over from the relicensing period that the NCWRC could utilize. Bob also made a comment that Kirk should keep and freeze any eels that he captures this year on Gaston.