Dominion Energy American Shad Working Group

17 December 2019

Location: Roanoke Rapids Power Station and/or Conference Call

Call-in Number: 1-866-740-1260 x 2917101

Scheduled Time 17 December 1000-1500

In-Person Attendees: Taylor Allen (Dominion Energy), Matt Balazik (USACOE, ERDC, Virginia Commonwealth University-VCU), Corey Chamberlain (Dominion Energy), Greg Garman (VCU), Bob Graham (Dominion Energy, retired), Wilson Laney (NCSU Applied Ecology and USFWS, retired), Jeremy McCargo (NCWRC-Inland Fisheries), Fritz Rohde (NMFS Habitat Conservation), Peter Sturke (Dominion Energy), Paul Vidonic (Dominion Energy), and Holly White (NCDMF).

Telephone Attendees: Katy Potoka (NCWRC), Twyla Cheatwood (NMFS, Habitat Conservation), Chris Smith (NCWRC), and Kevin Mack (NOAA-Fisheries).

Pre-meeting: Corey explained to Greg and Matt that the station is on an outage right now, so all the water that would normally be going down the tailrace is going through two or three gates into the Bypass Reach. Corey indicated that 8,000 cfs is being discharged right now. Corey explained to Greg how many staff are on station now. Bob explained that Gaston is remotely operated so no one is on station there. Bob explained the current outage to Greg. Corey provided details; the major transformers from 1954 are being replaced with more efficient units.

Convene: Peter Sturke convened the meeting at 10:09 am, after Holly arrived. Pete welcomed everyone and asked us to do introductions. Everyone did so.

Agenda Items

• Safety

Pete gave everyone the standard safety information. Watch out for the electric cord trip hazards. If have to evacuate the station for any reason, follow others to safety. Watch out for the fire ant mound near the back parking lot. Peter advised of the location of food and restrooms. Peter indicated that Tom Gunter will be bringing shrimp and fish to lunch today.

• Introductions and scribe

Wilson was the designated scribe for the meeting.

Peter reviewed the agenda. We will be reviewing Articles 407, Roanoke River Bypassed Reach Flows; and Article 413, Bypass Anadromous Fish Results 2015-2019. We need to address flow/sampling decisions for 2020 and beyond. Then we will have the NCWRC update, and finally the VCU Atlantic Sturgeon discussion, pertaining to the Roanoke and Chowan. Peter indicated that he would go through a brief presentation, then ask Jeremy and Holly to take over.

• Roanoke River Anadromous Fish

Peter reviewed the location of the Bypass Reach American Shad receivers. They have hydrophones on both sides of the river. Matt asked about range tests on those receivers. Peter noted that had not been done, but we discussed yesterday doing that task. Matt indicated that he can provide transmitters for

use in range testing. Peter indicated that would be awesome. The super high flows in the spring washed out the receivers in the tailrace, and they were replaced in March with VR2txs. They were downloaded in August with no detections present.

Holly indicated NCDMF put out 31 tags in American Shad this year, and they heard from 27 of them. All went up the Chowan River. The receivers were moved further up the rivers this year. One fish went up the Nottoway to Sussex, VA, and they tracked it all the way back down the river and out through Oregon Inlet. There are no plans to do any more tracking.

Fritz asked Holly to provide further explanation for Greg and Matt's benefit. Holly indicated that she has a short presentation that she can give, to provide the history of the work. Peter indicated that he would send Holly's presentation out later to everyone.

Holly showed us a table of all the American Shad tagged and released from 2013 to the present year. She noted that the tags were implanted via the esophagus. Holly noted that the tags can last for two years. Fritz noted that one fish did return in a subsequent year. Holly thought fish with tags likely die once they return to the ocean, since feeding will be impaired.

The numbers tagged/detected in subsequent years from NCDMF presentation.

Year	Tagged	Detected	Roanoke	Chowan
2013	7	5		2
2014	53	35	2	8
2016	56	29		2
2017	75	58	2	22
2018	45	40		13
2019	31	27		10

Holly noted that they have taken fin clips from all the fish. The hatchery contribution was low. The NCWRC ceased fry stocking in 2019. Greg noted that VA had quit possibly a year earlier. Holly noted that they have started working with VDGIF to assess the populations in the Chowan River drainages. The receivers were moved upstream on the Meherrin, Nottoway and also were placed in Potecasi Creek. There were no detections in the Roanoke River this year.

Matt asked about the receivers remaining in place. Holly noted that the array has been maintained in the Roanoke (the Harris/Hightower array). They pull the ones from the upper Chowan River drainages (except for the receiver at the mouth of the Meherrin River) after the spawning season.

Jeremy indicated that the plan is to keep the base array intact.

Holly indicated that there will be one receiver in the upper Chowan; near the mouth of the Meherrin.

Three fish did exit via Oregon Inlet this year. Holly reviewed the history of a female tagged on April 3, 2019. She was 440 mm FL, 496 TL. She ultimately went to the Nottoway River to spawn. Egress began May 8, and she exited via Oregon Inlet on May 16th. Holly showed us a map with the receiver locations.

Fritz explained that the study began because we wanted to know how many fish were going up the Chowan, versus the Roanoke. The NCDMF had agreed to do the work, with funding provided by NMFS.

Holly indicated that the presumption is that the larger portion of the stock is using the Chowan now. The Roanoke stock appears depleted.

Corey asked what the M:F ratio is. Holly said she thinks it about 60:40. Jeremy noted that you can't really sex the fish without increasing mortality. They try to limit their net sets as well, to 30 minutes to an hour. They have to handle the fish carefully and still may have to retrieve some that don't do well, to recover the transmitters and use them in another fish. Last year, they also had a pelican that got one, and had to chase it down and retrieve it to get the tag back. The fish was large, and the pelican had a hard time flying, so they were able to catch it.

Fritz noted that they also had to work around the commercial American Shad season. Holly noted that one tag was recovered from a fish house, in 2015. She noted that in 2013 and 2014, they implanted PIT tags as well. There was a Striped Bass study going on at the same time. Jeremy noted that was just a one-time sample.

Out of all the fish tagged that were subsequently detected in all the years, four made it up the Roanoke. One of the fish tagged was a large Hickory Shad (verified via genetic fin clip), which had been misidentified.

Fritz noted that Kevin Mack is preparing a paper for publication using the American Shad data. The total number of tags was 267. Of those that made spawning runs, 67 went up the Chowan or tributaries, and only 4 up the Roanoke.

Holly provided details of some of the runs. See 20191217_NCDMF 2019 American shad movement study.

Wilson asked whether or not there might be some historical records from fisheries on the Roanoke, which might give us some insight into how strong the American Shad run was, historically. We thought that perhaps there might be some shipping records, from either Plymouth or Jamesville, that might be useful. Jeremy noted that there is some information in Smith (1907).

Jeremy noted that the take-home messages are that the majority of the fish today, are going up the Chowan. We would like to know the historic ratio, in order to know how we should proceed with restoration on the Roanoke. The Didson study showed that the numbers were down.

Fritz noted that he didn't want to speak to that point just yet, since he didn't want to steal Jeremy's thunder.

Matt asked about Blue Catfish distribution in the Chowan, Roanoke and Albemarle ecosystems.

Jeremy and Holly noted that the species is present in both the Chowan and Roanoke drainages. Holly noted that when they begin the Striped Bass survey, November through May, the nets are filled with Blue Catfish.

Matt asked what mesh size they are using. Holly indicated the mesh sizes being used and noted that they also use sinking and floating nets. Jeremy and Holly indicated that the numbers are not yet as high as they are in the James River.

Peter asked about the Striped Bass population in the Chowan, versus the Roanoke. Jeremy noted that there is some proportion of the Striped Bass population in the Chowan, usually smaller fish. Peter was

wondering if the Striped Bass are heavier in the Roanoke, and lighter in the Chowan, the reverse of the shad situation. Jeremy noted that there isn't a lot of predation on the adult American Shad.

Holly noted that the water quality may be better in the Chowan, due to its origin. Corey noted that the Roanoke upper basin origin is likely producing better quality.

Matt noted that as Wilson pointed out, we don't know exactly how many fish there were, historically.

We briefly discussed ways that we could possibly locate some additional data sources. Maybe there are some data from the historical fish slides. **ACTION ITEM: Wilson will contact Joe Hightower and ask him again about possible additional sources of data.**

• License Article 407 – Roanoke River Bypassed Reach Flows

Peter noted again that he would distribute the slides later pertaining to Article 407. He reviewed the work that had been done. The Harris/Hightower report covered 2005/2006. The table Peter provided documents all the reports that have been produced. He reviewed the changes to the sampling regimes that have been made, including the addition of freshet flows. The next flow window begins in 2020, and that calls for an increase to 1,000 cfs during the spawning window. Peter noted that the NCWRC decided to cease stocking for a three-year period. Peter noted that they would like to continue the 750 cfs flows next year, in order to maintain consistent conditions during the no-stocking interval. So that is a big decision point, whether to continue 750, but with 1,067 as a freshet flow. Peter noted that 2019 was a pretty interesting year, for the ichthyoplankton.

• Review History and path forward

Matt asked about the increases required by the license. Wilson and Corey explained the adaptive approach that we took to trying to determine which flow would ultimately be most useful for anadromous fish spawning purposes.

Jeremy further explained that when we have flood events, any overage flows will be going down the Bypass Reach. Peter noted that the flow will not exceed 35,000 cfs. Jeremy noted that the dam is designed to handle in excess of 150,000 cfs (Correction provided in notes by Corey).

Matt asked what the release was during Florence.

Corey explained that last year was the biggest one-day inflow ever into Kerr, which was ~120,000 cfs. They never went above 35,000 flow leaving Kerr. Bob noted that in extreme circumstances, they can go over that level, but they don't like to do so.

Corey explained briefly how the Kerr flood pool works. As they approach elevation 320.0', they will increase the flows until it becomes water in = water out.

• 2015-2019 Ichthyoplankton and Electrofishing Results

Peter reviewed the ichthyoplankton sampling, beginning with showing us the sampling stations which are located in the Bypass Reach, near the dam, and downstream. There used to be an additional station, but it was hard to access, and Bob noted that the habitat was not very good.

Peter indicated that he would focus on 2019, since most of us have seen the data for the other years. Some samples were lost this year, due to a cleaning crew error. No complete days were lost. Greg was

dismayed that someone threw out the samples. Peter noted that the samples had fortunately been split, so only some portions were discarded. Peter noted that stations C1 and C2 are next to each other.

The samples from 2019, were the highest ever. An American Shad fry was actually collected, the first one ever. Peter later requested VCU to retrieve the fry and get a total length to age the fish and after attempting to recover the length of fry, it was discovered this was a transcription/data entry error made in the lab and the fry was an egg. There were a lot of Hickory Shad and also a lot of herring. This is one reason that Peter would like to keep the flows the same next year.

Jeremy noted that there has been spillage, and a lot higher flows at times during the spawning season, within the Bypass Reach. So, he suggested that it will be important to document the actual flows into the Bypass Reach. Peter noted that he has those data. He agreed that the large pulse could have been partially responsible for the increase.

Holly asked how the samples are identified to species. Do they use genetic analysis, or visual metrics. Peter indicated that they are visually identified. They are preserved in formalin, since no stocking was done this year. Peter agreed it would be cool to know if the fry originated from a stocked fish. Jeremy noted that they can't go back a generation. It would have to have come from two fish (parents) that were previously analyzed. Jeremy noted that the mathematics make it unlikely for identification to happen.

Holly noted that there was a large spike in river herring abundance this spring as well, the highest since 1993.

Peter noted that they also would like to eliminate sampling from in immediately in front of the dam, since they haven't captured many larvae at Site A. Sites C1 and C2 do pretty much cover all of the water coming down the reach. Jeremy noted that sampling in morning and evening also would tend to capture the different spawning events. We don't have any estimate of transit time from Site A, to Site C.

Peter noted that there wasn't a lot of different between morning and afternoon, in terms of the numbers of ichthyoplankton. Jeremy asked about the different tables. He had broken out American Shad from the rest of the ichthyoplankton.

Fritz noted out of the thousands of ichthyoplankton collected, only a small percentage have been American Shad.

Wilson noted that another confounding factor is that both Alewife and Bluebacks have established reservoir spawning populations upstream, and so some of those could be coming downstream and captured in the Bypass Reach.

Peter reviewed the 2019 sample make-up, in terms of species. Peter noted that he wasn't sure that there was an estimated age on the one American Shad fry collected (no age because it was later verified as an egg).

Holly noted that they used some of the fry from the 2018 stocking, to weekly sample and photograph to get estimates of length and so forth. They did this for a three-month period, until the growth rate stunted.

Peter reviewed the temperatures present in the Bypass Reach. There were no spills during the sampling period, Bob clarified.

Peter showed us the hydrograph for the river, during the sampling period. Corey noted that the flows down the river were higher, during the period preceding sampling.

Jeremy asked Peter to move the graph back to March 1, so we could see the flows prior to sampling.

Holly confirmed that the gauge for the hydrograph data is located about a mile downstream, so it does capture the tailrace flows as well. Peter showed us a different graph which showed the flood control events and the temperature.

Bob noted that the fish were spawning at pretty cool temperatures, near the end of March.

Jeremy noted that any time the blue line is above 20,000, the excess flow is going into the Bypass Reach. So, there was about 15,000 going into the Bypass Reach, during the first two weeks of March. Also, there have been other times when flood flows were going into the Bypass Reach.

Matt asked about the habitat type in the Bypass Reach, and what it was like prior to the flow releases. Bob and Wilson noted that it has always been relatively clean, at least from a sediment perspective. Wilson and Bob noted that the increase in flows, did adversely impact Poison Ivy, which was a beneficial change as far as those of us concerned who have had to sample in the Bypass Reach. Bob noted that there were pools of low DO at times, and also cooler water, due to upwellings. There was nothing, except flood flows, which occasionally brought in fine sediments. This year they did see piles of some sand, which they had not seen in the past.

Wilson noted that another license-mandated sampling program is monitoring the freshwater mussel fauna; Peter noted that happens every seven years.

Jeremy noted that Tyler Black, who was doing that freshwater mussel work, has left the NCWRC, so they need to find someone new to do the sampling. Jeremy has to get this done for 2021, Peter noted. Bob noted that there is usually a lot of snorkeling for the mussel survey work. Bob noted that he has seen far too many Eastern Cottonmouths in the reach for him to participate in that activity.

Fritz noted that the take-home message he is getting is that herring love the reach, but generally shad go somewhere else to spawn.

Bob asked if it is possible that low flows in some years could be inhibiting American Shad from making it to the Bypass Reach. Jeremy didn't think that was a factor. He noted that they are hampered in sampling, when the flows are below 3,000, but he thinks the fish are still there. Jeremy felt that Bypass Reach flows of 325 cfs were not optimal.

Bob clarified that he was thinking lower flows could be keeping the bulk of the population downstream.

Wilson noted that working with diadromous fish was just too complicated, because of all the factors that we have to consider.

Matt asked about any ichthyoplankton work done in the fall.

Jeremy noted that Joe had put the spawning mats out, at Weldon, in fall. Fritz noted that Joe's hands were slapped by NMFS Protected Resources because that sampling protocol had not originally been

included in the permit. Wilson noted that he would like Greg and Matt to include egg samplers in their permit request. Matt indicated that they are including both pumps, and egg mats, so larval sturgeon sampling will be covered.

Peter reviewed the American Shad results for 2019, reviewing the graph with us. There were no American Shad eggs or larvae collected in May.

Wilson asked about other studies, which may have showed some American Shad spawning later in the year, which he thought Dr. Rulifson had conducted. Jeremy thought Wilson was confusing some Striped Bass work, with American Shad.

Peter reviewed the Hickory Shad graph.

Jeremy noted that most of the river herring they see during sampling, in the mainstem, are mostly Bluebacks. Bob noted that there are many more Bluebacks, than Alewives, in the reservoirs. This was later clarified in an email from Bob on 1/27/2020 that this was surmised from a targeted sampling effort in the 1990s where there were many more herring that *appeared* to be Blueback, and that in fact other studies would suggest many of the fish were actually hybrids (Bluewives or Alebacks).

Wilson asked about any ichthyoplankton up the Chowan tributaries. The NCDMF does some sampling and they did send some samples to Heather Evans for identification. Some of them turned out to be Eastern Silvery Minnows. They take a lot of photos, for the purposes of training.

Wilson noted that there have been other misidentifications, by experts, so she shouldn't feel badly at all.

Holly agreed that it is difficult, and it was good to have Dr. Heather Evans be able to make the identifications using genetics.

We had a brief discussion of the position for conservation genetics, at the NCSM. Heather has left and the position needs to be filled.

Peter projected the average annual CPUE of ichthyoplankton in the Bypass Reach. There has been a general increase in herring and Hickory Shad in the last couple of years.

We discussed whether or not there is contamination in the samples from larval herring coming through the gates at the dam. Bob pointed out that herring had adhesive eggs, so they are not likely coming down through the gates.

There was general consensus that Site A should be dropped from further sampling.

Peter reviewed the Bypass Electrofishing results. For American Shad, the peak catch per unit effort (CPUE)was at 68.6. That peak occurred in the week of April 3. The CPUE drops to 0 by May.

Peter showed the graph of electrofishing results for each year. Catches since 2016 have been higher. Peter noted that there seem to be increases, four years after the flow increases. That might be a pattern resulting from recruitment four years prior.

Jeremy noted that year-class-strength does appear to play a role in the CPUE results for their sampling.

Peter showed a new graph, which Wilson had requested previously, to show the peak CPUE, and average. He showed graphs for American Shad, and Striped Bass, and river herring. Jeremy thought that the bump in Hickory Shad numbers was likely due to the flood pulse. All of the electrofishing results projected were for Site A.

We had some discussion of how Dominion has to manage the flows to allow Tom Gunter to get into the Bypass Reach and do the sampling.

Jeremy noted that the actual sampling conditions when the sampling is being done, have been similar since the sampling began. The flows are reduced for just a brief moment for Tom to put the boat in and then take out.

Bob noted that Tom gets as close to the dam as he can, because that is where the fish are present. Bob doesn't think that Tom samples all the way across.

Jeremy asked if any of the differences in CPUE among years, were due to sampling conditions being different.

Peter noted that the sample numbers are affected by flood flows.

Bob noted that some Striped Bass may have been flushed from the reservoir, during the flood flows this spring, so the SB numbers could have been somewhat affected.

Wilson confirmed that Peter will be sending the presentations out, so we can review them further.

Peter reviewed the 2020 Bypass Flows and Future plans. He noted Dominion is recommending removal of Site A from the ichthyoplankton sampling. Dominion would like to retain the 750 flow for one more year. **The members were okay with making those changes.**

• NCWRC update

Jeremy noted that Katy and Chris do all of the sampling for adult and juvenile American Shad and he is just reporting their results. They sample 9 sites per week, with 2 netters on the vessel. They take length, weight, sex and fin clips. Jeremy reviewed the daily sampling protocol. They begin at the NC 48 bridge, they sample four shoreline sites between the bridges, one middle site between the bridges, and two shorelines sites between Kapstone and the power lines, and one middle site below Kapstone.

Jeremy noted that 851 total shad were collected for a total CPUE of 87.7 fish/h for comparison with Dominion data this is equal to 14.6 fish/10 minutes of sampling. The peak catch occurred on April 11, at 14.3 C. The sex ratio was 3.3:1, M to F, with 653 males and 198 females.

Greg Garman noted that they never saw those kinds of numbers when they were sampling on the James River.

Jeremy noted that the river is fairly narrow here, so sampling is pretty easy.

Greg noted that they were sampling below Boshers Dam, and they never saw numbers like these.

Jeremy noted that they get higher catch rates in the river, than in the Bypass Reach.

Females are always larger than males. The size range overall is 340 to 540 mm.

Jeremy showed us the annual comparison, which is variable, and he reviewed the reasons for that variability. The catch rates were definitely lower when only one dip-netter was used. Catch rates between the bridges were somewhat higher, in some years. The trends are the same despite the changes in sampling protocol. They did see a change in sex ratio over the years, with more females depending on the sites sampled. Males tend to hug the shorelines, and females are more in open water.

Annual relative abundance by sex was graphed. Jeremy noted that there were a few years when the ratio was close to 50:50, but that was in 2014 and 2015 . The Peak catches were in 2008 and 2009. Jeremy felt if an adjustment was made for the period in which only one dip netter was used, there would be a peak from 2008 through 2012, and then a decline until the most recent years.

Greg asked about making some adjustment to try to remove some of the variability, such as looking at the first date of capture, and/or other phenology parameter.

Wilson noted that Stephen Lombardo, NCSU graduate student, had examined that factor for river herring and definitely found a relationship with climate change. Wilson wasn't sure we had data that would allow us to do the same analysis for American Shad.

Jeremy noted that on the Roanoke, water temperature is influenced by the reservoirs, where that is not so much the case on the other NC rivers.

Jeremy reviewed the 2019 juvenile collections. They collected 82 juveniles, in 9 trips. There won't be any hatchery contribution for 2019, but they can compare the numbers.

Jeremy reviewed the stocking results, and juvenile captures, for 2018. A total of 2.3 million fry were sampled. He further reviewed the results for returning adults, and out-migrating juveniles. Of returning adults, 71 percent were returning hatchery fish (Ages 3-7, with a majority of Age 5). The vast majority of these were from the Weldon 2013 stocking.

Greg asked if they had ceased OTC marking.

Jeremy noted that conditions at the state hatchery, were not conducive to achieving good marks with OTC, so in 2010, they switched to genetic markers.

With respect to the juveniles, they have seen variable percentages. The percent has been as high as 45 percent, but much lower on other years. Jeremy's hypothesis is that some of the fish they are sampling are likely recruits from the Chowan, in most years. That would explain the low contribution of hatchery stocked fish in the juveniles, and the much higher values from the returning adult fish. He definitely believes that Chowan production is affecting the juvenile numbers.

Corey asked when the sampling is conducted.

Jeremy noted that in the years when the hurricanes occurred, it might have been harder for the Chowan juveniles to enter the Roanoke, so that may also be a variable.

Jeremy noted that the numbers of fish stocked at Weldon has decreased during the last several years.

Jeremy noted that they also report the population estimate, based on the Harris/Hightower model. He provided the numbers for 2018. The estimated total population ranged from 20,530 to 60,082, based on the low hatchery contribution. He noted that there is a lot of uncertainty in that number.

Katy noted that the estimate was derived using the fry numbers. She noted that if you consider the numbers only stocked at Weldon, the estimates are much lower. Those numbers of females ranged from 500 to 1600. That is because the percentage hatchery contribution was so low. This is a function of the mathematics. Katy noted that we don't really know how many of the Roanoke Rapids fry are actually contributing.

Corey asked about moving the juvenile sampling further up the river, to eliminate the likelihood of capturing Chowan-produced fish.

Jeremy noted that they could move sampling further upstream, but it would be harder.

Bob noted that they need some lights.

Jeremy concurred.

Bob asked if this was the first year that we have documented adults from the Gaston fry stocking. There have been a few from other years, Jeremy and Holly noted, some fish from Gaston, and a few from Clover Landing.

The last slide was for the fin clips VDGIF had collected in 2018. There were 39 fish from the Nottoway River, with no hatchery fish identified. These clips were collected by Eric Brittle (VDGIF) and transferred to NCWRC for submission to the NC Museum of Natural Science genetics lab. There were 50 fish from the Blackwater River, and no hatchery fish were identified. One NCDMF tagged fish (Tag #16) was identified as a hatchery fish from the 2013 year class.

Jeremy noted that the genetic sampling done does not allow discrimination between the fish from the various rivers; either they are not genetically distinct, or the suite of markers being used is not sufficient to differentiate.

Jeremy noted that the genetic sampling validates the acoustic transmitter results.

Fritz noted that it is interesting that no fish went up the Blackwater. Eric Brittle didn't sample the Meherrin in 2018 or 2019. Fritz noted that some of the fish did go up the Meherrin.

Peter asked for questions.

Holly noted that the Dominion data show a strong year class in 2014, which appears mirrored in the NCWRC results as well. She wondered if 2014 was a strong year class on the Roanoke. Jeremy noted that was the year in which they collected the most females. Jeremy noted that from 2012-2014, they saw an increase in females.

Corey asked if there was a change in the fishery regulations as well.

Holly and Jeremy noted that there was a decrease in gillnetting for that year, but most of the fish are Chowan fish. But Jeremy noted that any small change may affect the fish observed on the spawning grounds.

- **NCDMF update**

Peter asked where NCDMF had been collecting the fish for transmitters. It was a mostly on the north side of the Sound. Peter asked about moving sampling to the south side of the Sound. Holly and Jeremy

noted that had been done, but it didn't appear to have made any difference. Holly noted that there was also some transition in personnel, which confounded things. She noted that a majority of the commercial fishery targets the north side for setting their nets. We believe that a larger component of the fishery consists of Chowan fish. If we had a lot more tags out, then perhaps a larger sample size would allow us to intercept more Roanoke River fish.

Jeremy noted that it would be interesting to put out some tags around Roanoke Island, which we know the fish have to pass.

Holly noted that NCDMF has recently reduced how the fishing occurred there, for protected resources reasons, for the last three years.

Jeremy noted that if we needed to do more telemetry, perhaps we could tag off Roanoke Island rather than at the NC 32 Bridge.

- **LUNCH Break: 12.26 pm**

Peter indicated that we would resume at 1:00 pm. Matt asked Holly a number of questions regarding the commercial fishery.

Reconvened: 1:00 pm

Peter confirmed that our telephone participants were back on the phone. Katy and Chris were present then Chris joined. Twyla was not yet on. Fritz said don't wait.

- **2020 Flows and study changes**

Jeremy suggested that we typically have one or two weeks at 15,000 in the bypass due to spring rain events, prior to the Bypass Reach flows. We all discussed whether there was a downside to keeping the flow at 750, during the period of no stocking. Wilson noted that Dominion would have to consult with USFWS in order to seek consensus (**received in email from John Ellis on 1/6/2020 regarding bypass flow regime for 2020)**. Jeremy and Holly didn't have any objection to keeping the flow at 750, with a freshet of 1067. Peter showed us the table of the proposed release pattern.

Jeremy noted that we will be having high flows this year, anyway, since the station is on outage. All of those flows, at least 2,000 cfs, will all be going through the Bypass Reach. There will be no flow going down the tailrace, so Peter noted that would be a good time to do the range test in the Bypass. Holly confirmed that in the event of an extreme event, all the flows would go down the Bypass Reach.

Corey confirmed that we would use the same template for the 2020 flows. They will begin when there is a full crew on at the station.

The ASWG agreed tentatively to two years, but we will revisit the issue again next year after we see the data. 2020 will maintain 750cfs flows in the bypass during the anadromous fish season including the week of 1067cfs flows in April.

Peter will talk to John Ellis (USFWS) and the Virginia DGIF representatives regarding their opinion regarding the flow regime. Concurrence received via email from John Ellis on 6 January 2020. Concurrence from VDGIF will be documented with these minutes and email correspondence.

Wilson, Bob, Peter, Corey et al briefed Matt and Greg regarding the license provision for upstream passage of American Shad. The provision is still in the license.

Peter introduced the Atlantic Sturgeon topic for Greg and Matt.

• **Atlantic Sturgeon on the Roanoke and Chowan Rivers (**Matt Balazik and Greg Garman)

Matt noted that he had not prepared a presentation. He presumed that everyone was familiar with the Atlantic Sturgeon work that was done on the James. Matt noted that historically, there was dual spring and fall spawning on the Roanoke (Matt noted that he had sent the published quote to Wilson some time ago). NC is a relative black hole, when it comes to Atlantic Sturgeon data, and NMFS and all the agencies want to close the gap. They put in a group Section 6 proposal. Jeremy is on it, and it includes the Roanoke, Cape Fear, Tar and Neuse. Matt noted that some of the preliminary work has already been done, by other researchers. They plan to begin sampling at the lower end of the Roanoke, at the pinch point where the river is narrow. Also, they may be able to determine whether there is a separate spawning group in the Chowan. Some fish tagged a number of years ago in the James, were detected in the Chowan. Matt noted that might have been a fluke. Some years ago, a fish that went up the Pamunky River initially, turned around and went up the James. There is some straying. The genetics may be James River, but the fish may stray. They will go especially for juveniles, less than 500 mm FL. They will go for adults in both spring and fall, and sample tissue for genetics. They want to show no mixing of the fall and spring fish and try to match with the juvenile fin clips.

Fritz asked if they planned to do gill nets only, or if they were going to do some trawling. Jeremy noted that NCDMF runs trawls in Albemarle Sound, for SB juveniles. Jeremy noted that trawling in the Roanoke would likely be problematic due to abundant snags.

Matt indicated that they have included egg mats and pumps for egg and larval sampling, in their permit application.

Jeremy noted that we know that there is a fall spawning run. With all the sampling done, no one has ever seen a spring Atlantic Sturgeon.

Matt noted that the spring run on the James, is much further downstream, so it is possible that might be the case on the Roanoke as well.

Bob noted that there are some really nice, deep holes, with hard bottom, in some of the river bends between the river mouth and Roanoke Rapids.

Matt noted that they plan to do sidescan survey work in April.

Fritz noted that the sidescan is really good for the survey.

Matt showed an image. He noted that they had modified the settings to enhance the imagery. They had great luck on the straightaways. They aren't quite winging the work.

Jeremy noted that if there is enough production, you should be able to see two modes of YOY juvenile sturgeon.

Wilson and Holly noted that Matt should be able to request the fishery independent gill net data from Michael Loeffler. Wilson noted that those data were used in the last ASMFC Atlantic Sturgeon assessment, and that Michael had already looked at those data to see if there were two modes.

Holly asked if they are going to focus on sampling in the rivers.

Matt noted that they would invite NCDMF to participate or would share any data they gathered.

We explained how the fall Atlantic Sturgeon sampling worked, prior to listing. A line of electrofishing vessels worked slowly from the rapids at Weldon, downstream, and "herded" the adult Atlantic Sturgeon into very large mesh gill nets, from which they were removed for acoustic tagging. That was prior to the species being listed.

Matt noted that they are using hand-made, 15-16 inch stretched mesh. He noted that the spring fish on the James are much larger than the fall fish. Matt noted that some of the fall fish may show up as early as April and wait for months to spawn. They theorize that some of the fall fish were inhibited by the spring-spawning fish.

Jeremy noted that we know that there are a lot of Atlantic Sturgeon in the sound.

We discussed the ability to get genetic samples run quickly.

Holly indicated that NCDMF is sending their samples presently to SC, to Tanya.

Matt noted if they catch enough, they can do population estimates and so forth.

Jeremy and Matt indicated that the earliest the work could begin, would be the fall of 2020, if the proposal is accepted.

The applications will come out, actually already have, in the Federal Register.

Matt noted that their last application was delayed by the government shutdown in 2018/2019.

Matt noted that assistance will be sought for logistical support, such as parking lots for sleeping, and so forth.

Bob asked how many tags they were planning on purchasing. Matt indicated they had purchased 16 V-16s, and they have some leftover V-7s as well. If they get funding, they will purchase more.

Jeremy noted that it is a comprehensive proposal which covers all the NC rivers.

Peter asked how long the study was proposed. The study is a proposed three-year study, but the permit will be for ten years.

Fritz noted that the proposal covers all the south Atlantic states as well.

Matt noted again that NC is a black hole. Andy Herndon (NMFS Protected Resources) is really fighting hard for this.

Fritz noted that NC had a Section 6 several years ago, but they didn't get complete funding. Holly noted that NCDMF had decided that the work wasn't really for them.

Matt noted everyone is welcome to come out and observe and/or assist in the work.

Holly noted that the array presence is beneficial as well. She wasn't sure about the Tar-Pamlico, and Neuse coverage by receivers.

The other rivers will be covered by Fred Scharf (Cape Fear), and Jason Kahn (Tar-Pamlico and Neuse).

Peter noted that with the flow shut down presently at Roanoke Rapids Dam, it would be a good time to try to recover a couple of receivers from the tailrace. They were on anchors and tied off to trees. The cables to the trees were the ones that broken. They should still be there.

Matt noted that he would need more indication than the hope that they are still there, before he would try to find them.

Jeremy suggested that they could be located with the sidescan.

Fritz asked for an explanation of how the pumps could work for sampling sturgeon larvae. Matt asked Bob to explain.

Bob explained that they use Honda trash pumps, for 316(b) sampling at some of their intakes. Bob explained how they use pipes, flexible tubing, and the pump to move water through a suspended plankton net in a tank. That is pretty much it.

Matt noted that you can control the depth, and all the samples come through alive.

Bob noted that they are working on a deck, so they can also get a really good density estimate, since the samples are expanded based on the intake volumes.

Holly asked another question about depth.

Matt explained how he was gaging the depth. Sometimes he would pick up leaves and sediments, so he could raise the intake a bit. On the James, he had to contend with tugboats, but that won't be an issue on the Roanoke. Matt would use 55-gallon drums on the James and dump the barrels back and forth. Greg thought that you should be able to use a GO flow meter, to actually measure the flows.

Bob explained how the intake could be moved along the bottom to sample. Matt noted that he was hoping to design a manifold in order to sample a wider area.

Matt noted that this does work to sample sturgeon.

Bob noted that Dominion had actually caught two larval Atlantic Sturgeon at one of their plants. Matt noted that everyone was excited except for Dominion. Bob noted that Dominion has been trying to obtain an Incidental Take Permit to allow Dominion Energy to continue sampling during periods when larval sturgeon may be vulnerable to capture in the river. Holly noted that the information would be good; the problem is getting the permit. Bob noted that comments reviewers on the permit were that it should be denied, due to the lack of information.

Matt noted that a big storm had likely pushed sturgeon larvae up in the water column. He thought that usually, they would not be entraining any larval sturgeon. This occurred in 2017.

Matt thought the sturgeon were only 7 mm. Bob noted that they were actually 9 mm.

Bob noted that they are still holding on to the fish. Greg has asked for them. They are stored in formalin.

Wilson asked that Matt and Greg collaborate with the NCSM with respect to any samples they might wish to have archived there for the collections.

Greg asked about getting state collecting permits. Holly and Jeremy indicated that it shouldn't be a big issue. Greg indicated that permit issuance in VA has become political.

Holly indicated that two permits will be required from NCDMF. They will require a report. Holly asked if they planned to do any sidescan work this spring. Jeremy noted that they won't know about funding, until March.

Matt noted that the Corps' ERDC had purchased two sidescan units. Greg noted that he would have a VCU sidescan within two months.

Matt and Holly were discussing year-class strength.

Wilson called Dr. Sonia Mumford, Edenton National Fish Hatchery Manager, regarding the potential for hatchery housing using the intern house, for VCU and/or other field personnel, if the Section 6 grant comes through. Sonia explained the current issue with respect to the condition of the house, and the possibility of repairs, versus demolition. She felt that some contact with the Regional Office staff would likely be beneficial in terms of making a final decision regarding whether to rehab the house or demolish the house and replace it with a trailer pad. She indicated that the hatchery would be pleased to provide other forms of logistical support, such as boat and equipment secure parking/storage, and also staff assistance when they are available. Wilson indicated that he would contact Steve Jackson of the USFWS Southeast Regional Office, Fish and Aquatic Conservation Program, and discuss things with Steve, including asking him if any letters would be beneficial.

Peter suggested that it would be good for us to produce a list of DFRTAC members, and their mobile phone numbers, so we can provide it to Matt and others working on this project in order to facilitate contact and coordination.

Jeremy noted that there would need to be some coordination with respect to coordinating net locations and so forth. Jeremy noted that there shouldn't be anything hampering the project.

Peter asked if anyone on the telephone had any questions. There were none.

• **Other Member updates/Housekeeping**

Wilson provided updates on some ongoing activities of possible interest to the members, including the NMFS SE Fisheries Science Center Climate Vulnerability Assessment, and the NCDEQ Science Advisory Committee which is working to develop nutrient criteria for Albemarle Sound.

• **Members**

Peter advised the participants not present at the prior day's American Eel Work Group meeting, that Bob Graham and Wilson Laney had been formally elected to the Diadromous Fish Restoration Technical Advisory Committee.

• **Upcoming meetings and coordination**

• **Scheduling and studies going forward:**

o **Bypass Anadromous Report due 30 June 2020**

o **Spring meeting:**

March availability?

Peter will send out a Doodle poll to determine meeting dates.

The meeting adjourned at 2:09 pm.