

**Roanoke Rapids/Gaston Hydropower Project
American Shad Working Group Meeting**

7 March 2017

Final Minutes

Participants: Jeremy McCargo (NCWRC), Fritz Rohde (NMFS), John Ellis USFWS), Dan Michaelson (VDGIF), Katy Potoka (NCWRC), Corey Chamberlain (Dominion), Pete Sturke (Dominion), Bob Graham (Dominion), Holly White (NCDMF, phone), Wilson Laney (USFWS, phone), Karen Canody (Dominion, phone).

Pete Sturke opened the meeting with a round of introductions and safety and sent Wilson, Holly and Karen the Dominion presentation.

Dominion Sampling

Anadromous Fish Sampling in the Bypass

Ichthyoplankton Surveys – Collected 4 anadromous species of Alosa: Blueback Herring (*Alosa aestivalis*), Alewife (*Alosa pseudoharengus*), Hickory Shad (*Alosa mediocris*), and American Shad (*Alosa sapidissima*). Seven American Shad eggs were collected via ichthyoplankton tows in 2016. Catch per unit effort (CPUE) was discussed following the hard data collection numbers. CPUE was defined as fish per 100 cubic meters of water sampled. 2016 results were added to previous year's results and the figure showed a decrease in Hickory Shad abundance since 2010. CPUE values for the American Shad have been low since 2010 with a recent downward trend from 2014-2016. 2014 was the year with the highest CPUE for American Shad since 2010. A slight increase in herring (blueback and alewife) eggs and fry was observed in 2016. Jeremy noted that 2016 experienced several high water events.

Electrofishing Surveys – The electrofishing survey results on the bypassed reach below Roanoke Rapids dam were discussed with focus on individual numbers as well as CPUE. Pete noted a malfunction on 11 April 2016 in the seconds counter on the electrofishing boat. To fix the error, the average time spent at the station on all other sampling events in 2016 was used for this sampling event (893 seconds) which helped normalize the CPUE observed on 11 April 2016. There were discussions about when increases to flows occurred in the bypass with special focus on the samples cancelled in May due to high flow events in the bypass. The next figure discussed the American Shad CPUE observed in the Roanoke Rapids Bypass Reach for adult anadromous and migratory fishes. CPUE For the purposes of this figure was defined as fish per hour of electrofishing. An increase in American Shad and Striped Bass CPUE was observed from 2015 to 2016. There was also a sharp decline in CPUE for all adult target species from 2014 to 2015. The next figure discussed was the American Shad CPUE by week of the year. CPUE was defined as fish per hour. The peak of the adult American Shad CPUE was observed during week 17 (19-25 April 2017), which Jeremy McCargo noted, came after the pulse of 1067 cfs which would indicated that the pulse served its purpose of drawing the fish into the spawning reach. Corey noted that this is the second year of 750cfs flows. The Roanoke River was in flood operations from the 7th to 28th of May

when average flows exceeded 20,000cfs. Katy's peak electrofishing catch for American Shad downstream of Roanoke Rapids Dam was 15 May 2016.

Bypass Flow schedule – The 2017 flow schedule, which is nearly identical to 2016, will provide opportunity to see if in 2017 a spawning run (higher CPUE) follows the flow pulse of 1,067 cfs, as in 2016. Corey noted the station will have some outages this spring where it expects to put more than 1,067 cfs in bypass. The increased flows to the bypass reach will provide more data going forward on how the American Shad respond to increased flows. It was difficult to draw conclusions from 2016 sampling efforts as the sample size observed during higher flows was insufficient.

There was discussion of Kerr Lake level and the dry spring being experienced. Kerr is currently at 297.8, ~2 ft above guide curve. Jeremy noted today was a good opportunity to discuss a contingency plan to meet the spawning target flows come April 1. Should we be meeting the spawning target early, or not, due to dry conditions and potentially warmer waters this spring? Same with keeping the attraction flow pulse. Holly was asked about any trend she's seen in American Shad Juvenile Abundance Index (JAI) with flow, but has not compared JAI to flow. There was some discussion of how to approach that. For Striped Bass, WRC compares the number of days in the target flow range to the JAI. However, for American Shad the DMF sampling is throughout the Albermarle Sound, so there may be fish from the Chowan drainage mixed in sample. Holly notes that some stations are near the mouth of the Roanoke River. Jeremy also noted that they have juvenile electrofishing data from Plymouth that could be compared with flow. Katy noted that juvenile abundance tends to follow adult abundance.

For a target flow contingency plan, need to know what's in Kerr, and what's going on with the fish (temperature dependent). Dan noted 302 ft in Kerr puts water up in the brush, and results in good Largemouth Bass spawn. Unlikely to get this year, but Dan would like to preserve that in years when he can. General thought was to go from 2,300 cfs (assuming not much change from present) to 6,600 cfs the first two weeks of April to get fish moving. Then, go to 5,000 cfs, instead of 5,800 cfs unless Kerr has the water to increase flows to the minimum target level.

Dominion sampling plans for 2017. Dominion will continue the bypass electrofish and ichthyoplankton sampling as in 2016. Pete will talk with Tom about doing the electrofishing at station A when high flows washout the lower sampling sites (stations C1 and C2).

NCWRC Sampling

The sampling programs overview will be pretty much the same as provided in the conference call in October. All data were collected by Katy.

Electrofishing Surveys - Sampling began 17 March and went through 2 June, 2016. Two netters were used, same protocol as for the last several years. Nine sites were randomly chosen to sample between Rt. 48 and the downstream power lines. There was a slight increase in catch on May 19, otherwise CPUE was fairly stable. May 19 coincided with an increase in flow. The total CPUE for 2016 of 17 fish/hour was the lowest on record in a long time. Sex ratio was 2.3:1 males: females.

Fewer big fish were available in 2016 than in 2015, when there were an exceptionally large number of bigger fish (2008 and 2009 year class). There was a missing year class in 2012. Overall, there has been a decreasing trend from 2013 (maybe even 2009 if account for only using 1 netter 2009-2011?) to 2016. Commercial harvest in the Sound has been low the last few years, but the fishing season has been shorter since 2014. The independent fishery catch rate showed a drop in catch from 2014-2015 to 2016, but the sustainability plan index has been at threshold level. However, that data does not track solely Roanoke River data (mixed stock).

Broodstock Collections – Of 314 American Shad retained for broodstock, 160 were females, 154 males. All clipped for genetic analysis. Fry were produced by Watha and Edenton hatcheries. All fish are identifiable by Parentage Based Tagging (PBT) analysis. White Perch predation was observed at the Thelma stocking site. If access could be provided to the ramp inside the gate at Gaston Dam, would be good location for stocking. Station seems OK with that, so long as they were provided a heads up when the stocking truck was to arrive. Safety considerations were discussed, including use of gloves and PFD when within 6 feet of water. **Action Item:** Dominion to provide Environmental Biology Safety Work Practice to Jeff Evans at Watha. *Complete 13 March 2017 by Peter Sturke.*

Juvenile Collections – Occurred September – November, 2016, at Plymouth at Domtar facility. Collected only 83 fin clips, seems Hurricane Mathew pushed the fish out. In 2015, of 367 broodstock fish and 179 at large fish, 233 were of hatchery origin (~43% hatchery contribution). Jeremy provided age group break out. 2011 cohort was largest component, in large part due to most recruitment occurring at Age 4. It seems that as the wild population decreases the base level of hatchery fish is maintained within the system. Of juveniles collected in the fall, 29 of 118 tested were from hatchery origin (~25% hatchery contribution), all from the Weldon stocking (none from Staunton River or Gaston Lake stockings).

Population Estimation – The Harrison/Hightower model was used to estimate the spawning population of females as a function of hatchery contribution fecundity, fertilization, ripening, egg and larval survival and days old at release. As the model is dependent on the genetic analysis that is completed the year following data collection, population estimates lag data collection by one year. For the 2015 spawning season, the estimate was 1,651 female fish (406 – 1,851).

DIDSON Survey – The survey was done in 2015, 250 hours of video were processed. 62,769 upstream migrating fish were counted. Application of electrofishing data for species proportions to the video data indicated only 9 American Shad, 827 Hickory Shad, 596 Striped Bass were seen. The expanded model estimate was approximately 20,614 American Shad (5,089 – 105,132), approximately 2 million Hickory Shad, and approximately 1 million Striped Bass.

NCWRC Plans for 2017 – There may be sampling difficulties if the drainage does not receive more water/precipitation, in terms of boating ability. Otherwise, same plan as 2016 except for stocking at Gaston Dam versus Thelma.

NCDMF Sampling

2016 tagging for American Shad in Albemarle Sound - On February 6 started the 2017 tagging, and 38 tags have been put out so far. DMF expects to put out 36 more tags when the fishing season ends on March 24. Most of those shad will be fin clipped, so can identify if those fish were of hatchery origin. There will be a review of the 5-year fisheries plan for Albemarle Sound at the close of the 2017 season. Eric Brittle of DGIF will be helping put out receivers in the Chowan drainage. There has been some work looking at Albemarle Sound vs. Chesapeake Bay shad, but nothing has been done to look at Chowan vs. Roanoke rivers. It would be best to obtain clips from the Nottoway and Meherrin rivers to characterize their genetics to do that. Dan noted that there are some microchemistry procedures that could be used. The current tagging study will be able to tell if a stocked fish goes up the Chowan, given if a stocked fish is tagged and moves up the Chowan. This will be the last year of the NMFS/NCDMF tagging study.

Also, ASMFC is doing a coast-wide river herring assessment. Next year will do coast-wide American Shad assessment. The American Shad assessment will be river-specific for NC, and use data already obtained since 2016. The assessments are done every 5 years, and a benchmark every 10 years. The assessments will provide information on fishing mortality, among other things.

VDGIF Sampling

Electrofishing – No shad were collected in the Staunton River this fall.