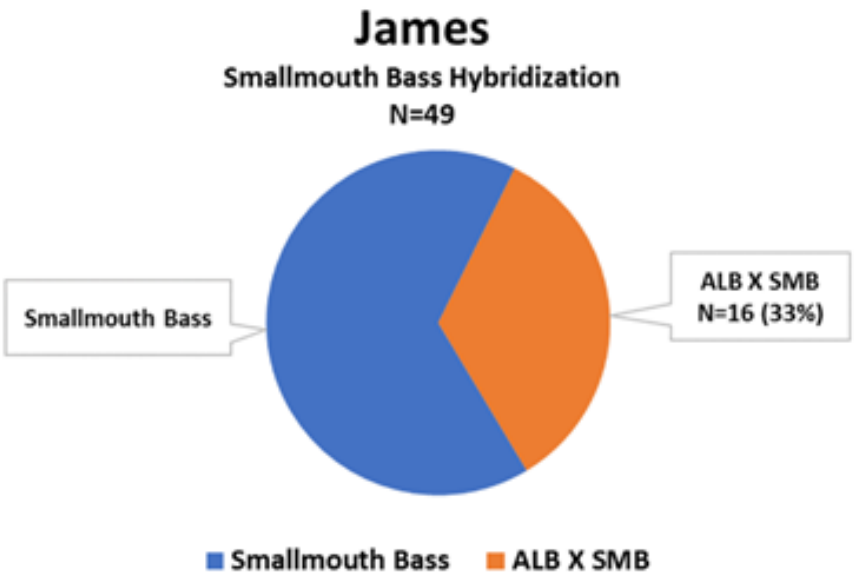
Biological Notes and Data related to Alabama Bass Invasion in North Carolina

Catawba River basin

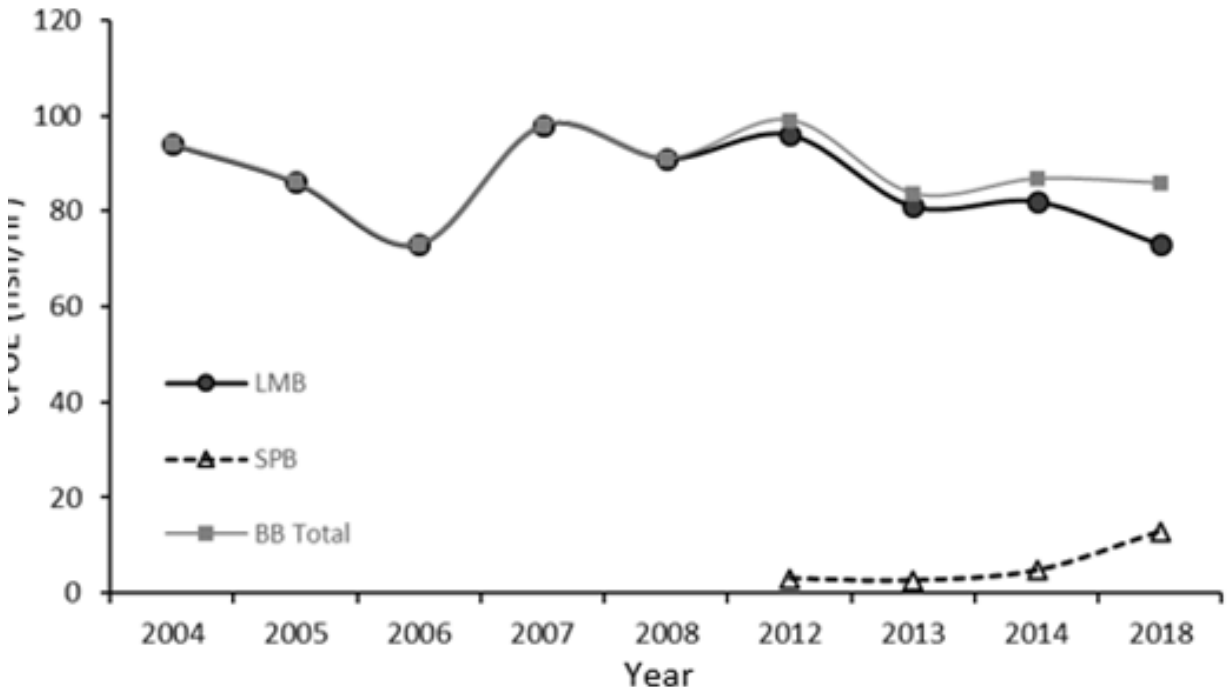
Lakes James and Rhodhiss – The initial take home is that Alabama Bass (ALB) introductions in Lake James has led to hybridization with Smallmouth Bass (SMB). The process takes time but Smallmouth Bass will eventually be eliminated from the lake and replaced by Alabama Bass. This is a significant loss for our state and our anglers. The graph below represents the level of ALBXSMB hybridization present in Lake James within approximately 10-years since Alabama Bass were first introduced. James piechart below shows percent hybridization of fish that looked like "smallmouth bass".



Lake Rhodhiss – Commission staff have observed a second black bass species in Rhodhiss, a historically Largemouth Bass only fishery, over the last several sampling season. Genetic results from tissue samples are being processed currently and it is most likely these tests will again confirm the introduction and presence of Alabama Bass. Largemouth Bass genetic assessments have been completed and no hybridization was present in the Largemouth Bass sampled. However, changes to the overall Largemouth Bass abundance is a concern given our knowledge of the direct and indirect influence on species composition that Alabama Bass have exhibited in other reservoirs in the Catawba basin

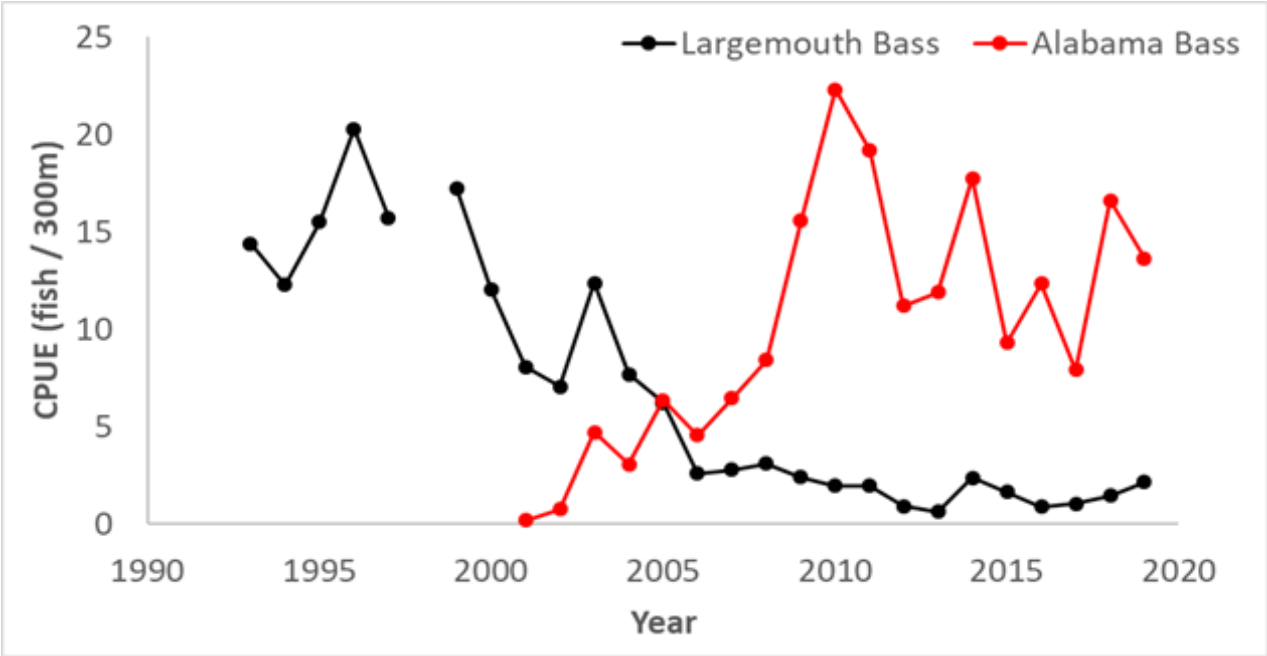
Lake Hickory – ALB first appeared in our electrofishing gear in 2012. Their numbers have expanded much more slowly than in Norman, Belews, and other less productive systems, presumably because Hickory is more productive than the lakes where ALB have taken off more quickly. We have only documented ALB in the lower half of the lake where it's less productive and water clarities are higher. That being said, we feel that the sampling efficiency of our electrofishing surveys

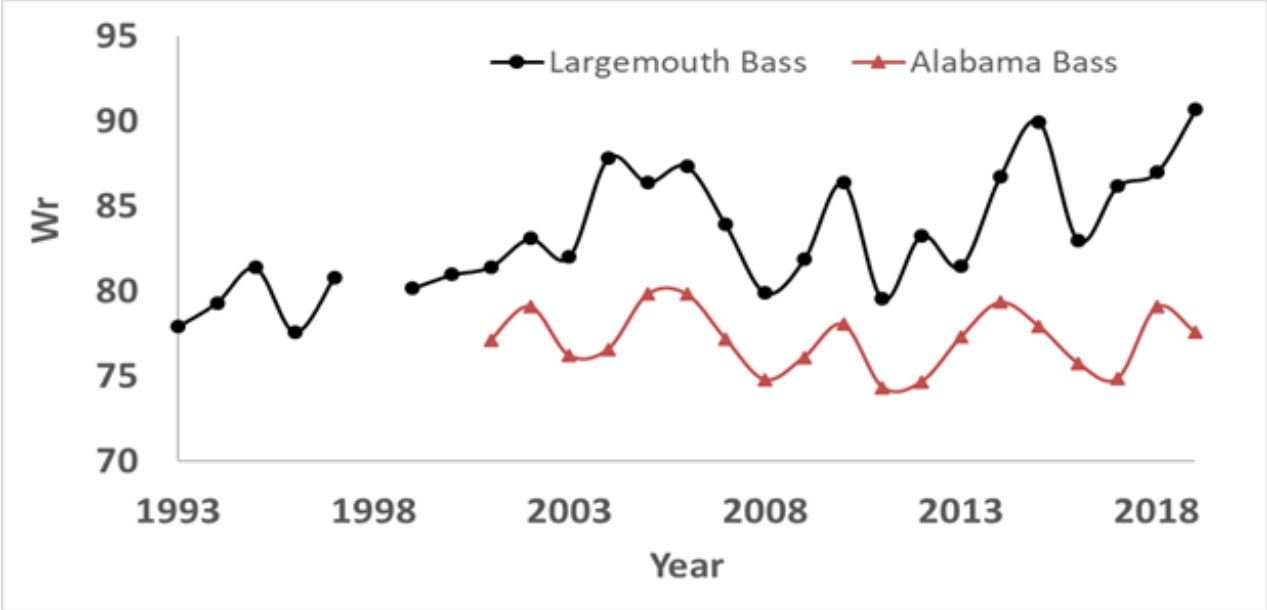
is likely poor when it comes to ALB. As in Belews, we seem to be missing the older (> age 3), larger individuals, which means that we're likely underestimating the true abundance of ALB. Additionally, reports we get from anglers of how many ALB they catch in the lower lake seem higher than expected based on our data, and we've also had reports of anglers catching them in the upper half of the lake where we have not yet collected them. We have not yet documented declines in LMB abundance (the graph in the .ppt file shows a slight decline over the past few surveys, but we've since reanalyzed that data on a fish/site basis instead of fish/hr and the fish/site data is not showing the same downward trend as fish/hr). We'll obviously be watching things to see what happens as ALB continue to increase. Hickory graph below shows cpue.



Lookout Shoals Lake – we've had a few angler reports of ALB being caught in the past couple of years, and we documented them ourselves for the first time in fall 2020. If there is anything to the relationship between productivity and the degree to which ALB thrive and impact other black bass fisheries, we might see more dramatic impacts in Lookout Shoals than in Hickory, as it is usually a little lower on the trophic rating scale than Hickory during most years.

Lake Norman – The first detection of Alabama Bass in NC was in Lake Norman in 2001. Within 5 years, Alabama Bass densities in Lake Norman surveys were higher than Largemouth Bass densities and that disparity has never changed with Alabama Bas being 10-20X more abundant than Largemouth Bass since 2006. Largemouth Bass still exist but have been pushed out of most of the habitat in Lake Norman and is now found in small numbers in the backs of coves and creeks. Norman graphs below show cpue and condition.

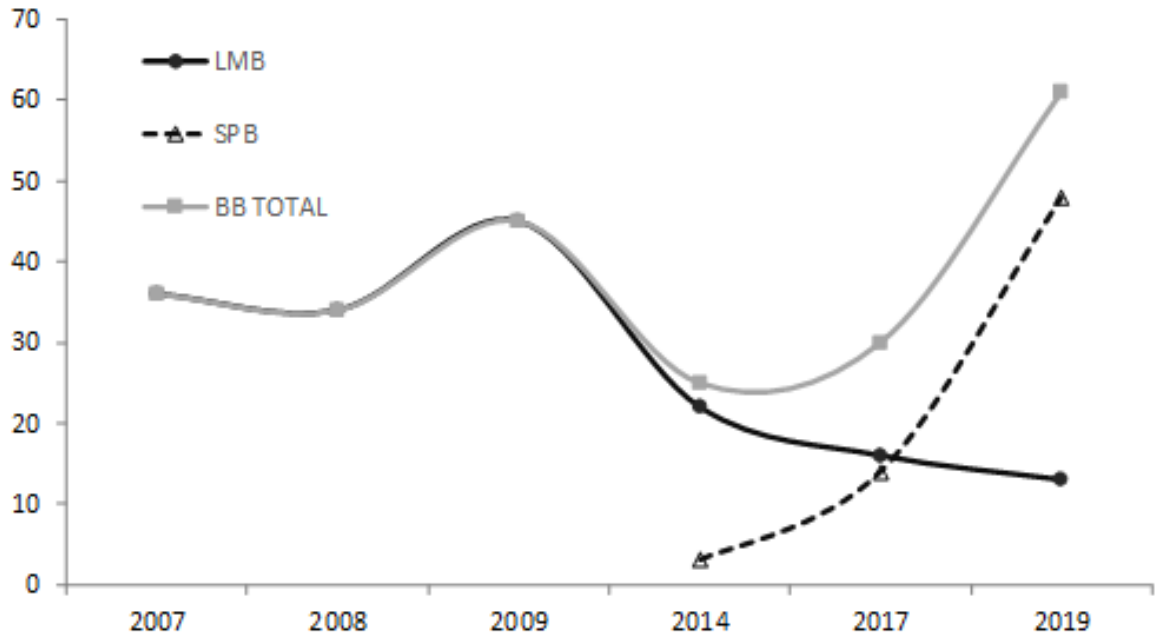




Mountain Island and Wylie lakes – The Alabama Bass have flowed downstream from Norman and have become well established. Mountain Island Largemouth Bass have largely been replaced by Alabama Bass similar to Lake Norman. Lake Wylie also is starting to see effects from Alabama Bass introductions. Noticeably reduced weights in tournament weigh-ins is directly related to the replacement of Largemouth Bass by Alabama Bass.

Dan/Roanoke River basin

Belews Lake – There has been a great impact to this lake's black bass due to the introduction of Alabama Bass. Between the time Commission staff first started catching ALB in their electrofishing surveys in 2014 and the last survey in 2019, ALB CPUE increased from 3 fish/hr to 48 fish/hr, while LMB CPUE has decreased from historical averages of 35-40 fish/hr to 13 fish/hr in 2019. Staff are likely underestimating ALB abundance pretty significantly and not seeing ALB >3 years old in surveys. CPUE graph below for Belews Lake showing a crash of LMB and rise in Alabama Bass.

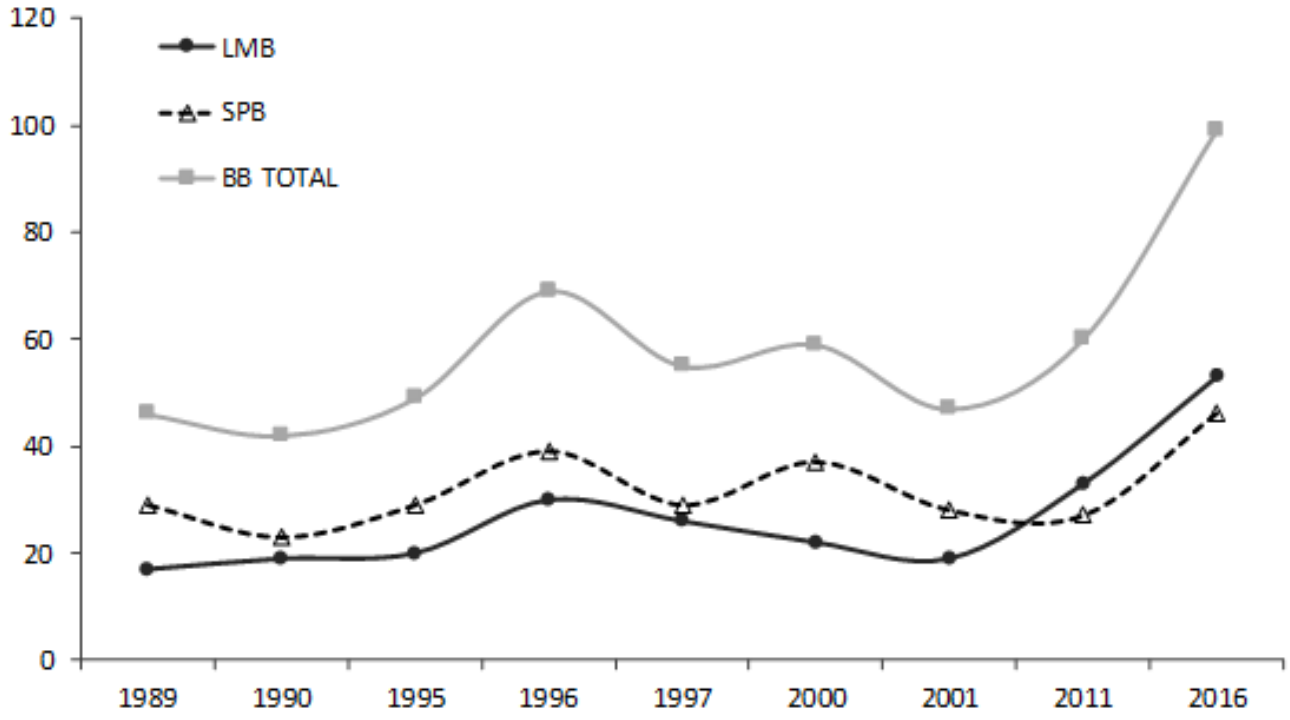


Dan River – There is an expectation that Alabama Bass emigration from Belews Lake into the Dan River, where we have one of the better Smallmouth Bass fisheries in NC. Though staff have not confirmed that Alabama Bass are already in the river during one of our surveys, staff have gotten reliable angler report of Alabama Bass being caught in the river. Staff are extremely concerned about how the existing Smallmouth Bass fishery might be impacted by interbreeding with Alabama Bass. Staff have planned stock assessment surveys on the Smallmouth Bass fishery planned for this summer and will be collecting tissues for genetics analysis to look for signs of interbreeding, but at the moment we don't have any data to share.

John H. Kerr Reservoir and Lake Gaston – Staff have documented "spotted bass" likely Alabama Bass in both reservoirs. Gaston's most recent survey shows that 33% of the population now consists of Alabama Bass. Not sure of the effects in John H. Kerr because it is managed by Virginia Department of Wildlife. Also, now that staff are seeing Alabama Bass in Lake Gaston it is just a matter of time that they are seen in the lower Roanoke River and Chowan Rivers which has been a historically good coastal Largemouth Bass fishery. This is very concerning.

Yadkin River basin

W. Kerr Scott Reservoir – in addition to its Largemouth Bass fishery, this lake has historically supported one of the few "Kentucky" Spotted Bass fisheries in the state, and a very low number of Smallmouth Bass are present as well. Around 2012, Commission staff began seeing what was assumed at the time without genetic analysis to be SMB x SPB hybrids, which was strange since spotted bass had been present for decades and we had never before seen evidence of hybridization with Smallmouth Bass. Subsequent genetics surveys in 2016 revealed that Alabama Bass had actually been introduced into the lake, which explained the presence of the hybridized Smallmouth Bass. Widespread hybridization between Alabama Bass and Spotted Bas was documented during the 2016 survey, with the genetics of Spotted Bass consisting of ~70% Spotted Bass and 30% Alabama Bass genes. We assume that the proportion of Alabama Bass genes will continue to increase over time. At the time of our last survey, we had not yet detected any impacts to the Largemouth Bass population, possibly because at the time of our last survey the Spotted Bass in the lake still contained more Spotted Bass genes than Alabama Bass genes and were presumably still behaving more like Spotted Bass than Alabama Bass. Staffs concern is that if the proportion of Alabama Bass genes in the Spotted Bass population continues to increase over time, that the behavior of those fish will shift towards being more Alabama Bass-like, and as they begin to behave more like true Alabama Bass, that's when we might start seeing more impacts to the Largemouth Bass. CPUE graph below shows that Alabama Bass are likely on the rise in W. Kerr Scott.



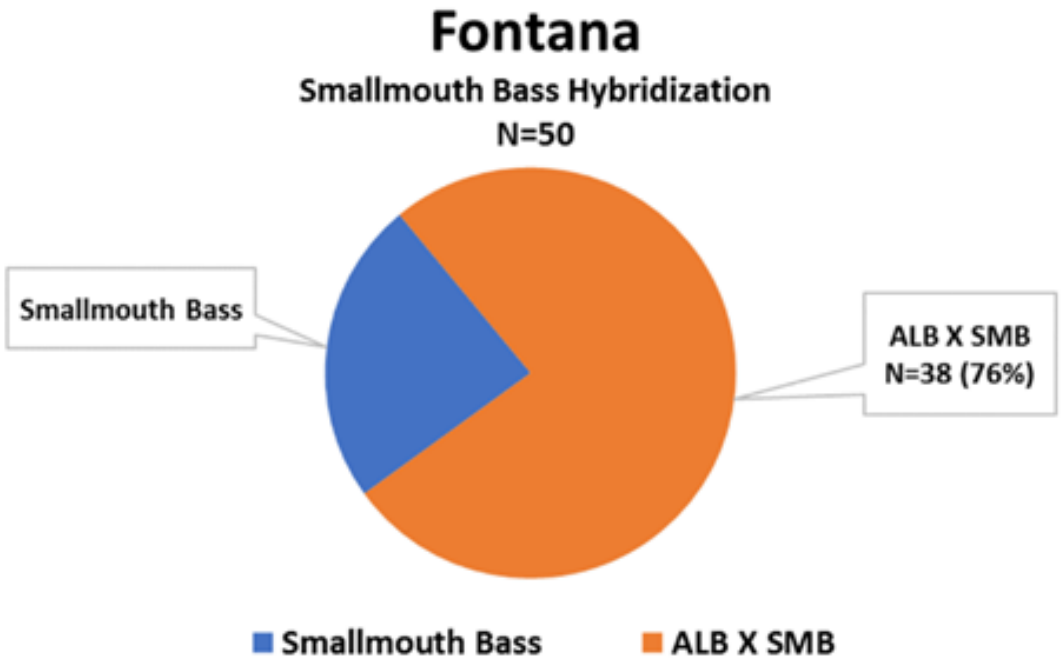
Yadkin River – North Carolina has a high-quality Smallmouth Bass fishery in the Yadkin River from the base of W. Kerr Scott dam downstream through Wilkes, Surry, & Yadkin counties, including most of the major tributary rivers entering the Yadkin River throughout this stretch. Similar to staff concerns in the Dan River, we are worried about how Alabama Bass will affect the Smallmouth Bass fishery in the Yadkin River and its tributaries.

Broad River basin

Moss Lake – A once solely Largemouth Bass fishery is now dominated by Alabama Bass. Genetic testing was conducted in 2019 to confirm the introduced species was in fact Alabama Bass. Unfortunately, in appears the Alabama Bass have already made their way downstream and have been collected from the Broad River below Moss Lake Dam.

Little Tennessee River basin

Fontana Reservoir – A traditional Largemouth and Smallmouth bass fishery has experienced drastic changes over the past two decades. A once prominent Smallmouth Bass fishery has been dramatically altered due to the confirmed presence of Alabama Bass. Dramatic hybridization between introduced Alabama bass and Smallmouth Bass in documented in >75% of the Smallmouth Bass genetically tested, see graph below. If this trend continues, it is likely that the once regionally popular Smallmouth Bass fishery at Fontana will consist entirely of hybrid crosses and eventually only pure strain Alabama Bass. Pie chart below shows the continued hybridization of fish that look like “smallmouth bass”.



Hiwassee River basin

Chatuge Reservoir – Chatuge has the distinction of being the first reservoir where "spotted bass" were first thought to be introduced in the western NC. Geographically, Chatuge is located on the NC/GA border due north of Atlanta, Ga. and Lake Sidney Lanier. The introduction occurred 30 years ago, since then the "spotted bass" have been genetically identified as Alabama bass. Black bass composition has changed considerably over that time frame from a once Largemouth dominated (60%) and Smallmouth Bass (40%) fishery to a fishery now dominated by Alabama Bass (80%) and a much less abundant Largemouth Bass (20%) population. Smallmouth Bass are no longer present in any appreciable numbers, basically nonexistent.

Hiwassee Reservoir – Hiwassee historically supported Largemouth Bass, Smallmouth Bass and Spotted Bass (Micropterus punctulatus). Hiwassee now has Alabama Bass too. The presence of Alabama Bass was confirmed in 2019. Of note, Alabama Bass hybridization with Smallmouth Bass and Spotted Bass was detected in the genetic results. What does the future hold for Smallmouth Bass and Spotted Bass in Hiwassee, the jury is still out, but all indication of from other reservoirs in the region is that it's not a favorable verdict.

Apalachia Reservoir – Apalachia is located immediately downstream of Hiwassee Reservoir and traditionally supported three black bass species, Largemouth, Smallmouth and Spotted bass that for all intents and purposes played well and got along together nicely since the dam was constructed. However, changes in the species composition have occurred and know included the presence of the Alabama Bass. Recent genetic results from Apalachia indicate strong hybridization between Alabama Bass and Spotted Bass and moderate hybridization between Alabama Bass and Smallmouth Bass. Most interestingly we detected no hybridization among Smallmouth and Spotted bass which had coexisted together long before Alabama bass were on the scene. It is obvious from this example alone that Alabama Bass is the more promiscuous species of the four black bass now in Apalachia.