

137th Meeting of the South Carolina Aquatic Plant Management Council

Attendance:

Council Members: Chris Page, Bill Marshall, Tammy Lognion, Casey Moorner, Adam Leaphart, Stacey Scherman, Chris Stout, Chad Altman, Willie Simmons

Guests: Julie Holling, Matthew Puckhaber, Brian Lynch, Carl Bussells, Allan Stack, Ernie Guerry, Judson Riser, Chad Holbrook, Lee Hendren, Bob Perry, John Kinsey, Levi Kaczka, Benjamin Thepaut, Colleen McDonald, T. Thames, Jane Hood, Nick Hammond, Adam Deal, Tancey C., Sam C., Clark McCrary, and two other unidentified guests

Location: WebEx Video Conference

Call to Order: 10:13 a.m. 3/10/2021

Minutes:

Chairman Chris Page called to order the 137th meeting of the South Carolina (SC) Aquatic Plant Management Council (Council). He knew it was about 15 minutes after 10:00. He apologized for the delay and technical problems. What we are going to do a little different today is when we do motions, Ms. Holling is going to do a roll-call vote. That is going to be easier than having to do a poll in the program. He gave a brief review of the agenda. He asked that when we are doing the public comment period, we will listen, but when we move to the public comment discussion and responses, when the Council is discussing issues, let us do the discussing. He does not want people interjecting things in there. If you interject and continue to interject your opinion, we will drop you out of the meeting. He hates to do that, but please use common courtesy.

Mr. Page said the first item on the agenda is the minutes of the January 20, 2021 meeting, the 136th meeting. He assumed the Council got those from him and read them over the weekend. He asked if there was any discussion on those minutes. He shared them for everyone to see. He asked if everyone could see them. He gave everyone a minute to look over those. He opened the floor for any changes or a motion to accept the minutes. Mr. Marshall made a motion to accept the minutes. Ms. Moorner seconded the motion. Mr. Page asked if there was any discussion. There was none and he asked Ms. Holling to do a roll-call vote. She did and the results were 9 'yea,' and 0 'nay' or 'abstain,' so the motion carried. Mr. Page said that was a lot easier than doing the poll.

Mr. Page moved to the public comment period. There are several members of the audience here and he knows some of them want to comment. He could not see all of you, but he asked who would like to go first. Mr. Perry said he would like to speak. Mr. Page recognized him and gave him the floor.

Mr. Perry thanked Mr. Page and said it was good to see the Council members. He raised an objection to the continued release of sterile grass carp at the recommended level of stocking. He listened carefully to the Council meeting of January 20th. The discussion and presentations of that day do not support continued stocking at the level recommended by the draft plan. On page 57 of the current draft plan, immediately after the recommendation of a maintenance stocking of 10,000 sterile grass carp in 2021, the plan states, and he quoted, “Annual data should include estimates of hydrilla acreage, estimates of native vegetation acreage, and fall – based triploid grass carp surveys. Grass carp surveys should function to further assess the relative condition of the population and aid in yearly stocking decisions. All efforts will be made to determine an appropriate balance in the Santee Cooper system by maintaining control of hydrilla while promoting beneficial native vegetation.” The data collected on *Hydrilla* acreage and estimates of native vegetation do not support the release of this many sterile grass carp in 2021. Further, releasing this many sterile grass carp in no way represents a balanced approach, as noted to be necessary to control *Hydrilla*, and all efforts are not being expended to promote beneficial native vegetation.

Mr. Perry said a balanced approach to any biological issue requires a data-driven analysis and consideration of a multitude of factors, complex factors as well as societal and unintended consequences. For the past many years, my impression from being on the Council, reading the minutes, and later attending and participating at Council meetings, is that the balanced approach the Council should strive for is actually a unilateral approach focused solely on *Hydrilla* control and grass carp release. Other affected resources and resource users simply are not being given a fair shake. Rarely, if ever, are waterbird or game fisheries interests considered, nor the vast array of affected users, which include our hunters and fishermen. These are citizens who pay taxes by hunting licenses and fishing licenses and pay for registering their equipment and enthusiastically support the programs of the Department of Natural Resources (DNR). These people, by in large, do not want this many sterile grass carp stocked on an annual basis, particularly with the dearth of data and the lack of rationale that is used to support such a decision. These people number in the many tens of thousands. They are hurting and are not happy because their pleas are never really considered. These are the people who know there is no demonstration that the amount of *Hydrilla* in these lakes warrant this level of stocking in order to maintain a certain population and age structure of sterile grass carp. The lack of recovering native herbaceous and emergent vegetation is a clear indicator that the lakes contain too many sterile grass carp. The resource and economic damage, too, has been lasting and will continue if the Council does not seek a truly more balanced approach, looking beyond the piddling acreage of *Hydrilla* coverage and not succumbing to the fear of another *Hydrilla* explosion.

Mr. Perry stated the history of grass carp stocking in lakes Marion and Moultrie is a sad commentary on false starts and missteps that have led to calamity and unintentional, but real, harm. During his tenure on the Council, he was the unwavering voice of restraint when it came to maintenance stocking of sterile grass carp. He consistently supported a more cautious and adaptive approach. When fixing the maintenance stocking was discussed, the Council members

who remain, will remember that he agreed to the fact that fixing the number would allow the Council to eliminate the variability of frequently changing annual stocking numbers, but he recommended fixing it a lower threshold. He has reluctantly come to understand caution and restraint are simply not being used by Council through its collective decisions. In the minutes of meetings over the past years, he has seen no significant discussion of whether or not fixing of the maintenance stocking numbers actually worked. The sporting public, he believes, is as unconvinced as he is.

Mr. Perry said he can come to no other conclusion that too many sterile grass carp continue to be released into lakes Marion and Moultrie. The coverage of *Hydrilla* does not warrant the population level the Council seems to seek. If the Council does not seriously consider implementing restraint on sterile grass carp stocking, there will be no meaningful recovery of desired native aquatic vegetation to support the avian and fisheries resource and their enjoyment. This is a prediction based on an examination of the past and the facts and trends currently at hand. There is not a good biological return on your investment in continued maintenance stocking of sterile grass carp at this level and into the foreseeable future. He asks you to please think about the unintended consequences of what you decide. Please reduce the maintenance stocking numbers of sterile grass carp to a number that is more reasonable. No one blames the Council for past mistakes, but over more recent years, there has been ample opportunity for correction. Now is the time to make a commitment to change from past implementation, because it is not working in a balanced manner. Balanced is very important. We all know that the definition of continuing to do the same thing when it is not working. Failure to adapt now at this critical juncture in resource health and threat to continued public use and enjoyment will cement the history of the Council actions to one that tells the sportsmen and sportswomen of SC that their wishes are not important. Please do not wait until it is too late for the ecological health and biodiversity of lakes Marion and Moultrie to recover. Thank you.

Mr. Page thanked Mr. Perry. He noted that Mr. Perry brought up some points and stuff that we are going to discuss in a little more detail later when we talk about the plan. He asked if anyone else wished to comment.

Mr. McCrary said he would like to ask a question to the Council, if possible. Mr. Page gave him the floor. Mr. McCrary asked if there was anyone on the Council that was an active waterfowl hunter that purchases an annual duck stamp and hunts waterfowl in SC on public reservoirs.

Ms. Moorer spoke for the Santee Cooper (S-C) staff. She holds a position on the council. She is not an active waterfowl hunter, but several members on the team here at S-C are and they do hunt across SC. We have other people on our team that hunt in other states as well, on both public and private property. We do have people that are on our team and close to lake management on the S-C lakes who are avid water fowlers. We also have people who fish competitively across the Southeast that are on our team. Although she personally does not waterfowl hunt, we do have people on our team.

Mr. McCrary asked if there was anyone else on the Council that hunts, the Council specifically, that hunts waterfowl in SC on public reservoirs.

Mr. Page said he does not anymore. He has not had time. He kind of lost his interest in it when he started having kids in sports and he got away from it. That that does not have anything to do with the Council.

Mr. McCrary said he thinks it does because the Council is tasked with waterfowl habitat. Whether inadvertently or not, this body makes decisions that affect waterfowl habitat for years to come. He is worried about whether or not the waterfowlers voices are present here.

Mr. Page said he understands Mr. McCrary's point, but it is not really valid. We have multiple users that are not represented, per se, on the Council, including all of the residential people, all of the public works people. We do not work for public works. He is not a water person. He does not work for a water company. He does not even own a boat anymore. He does have boats at work, and he does get out on the lakes and looks around and does stuff. He has friends that have boats. He has friends that are residents on the lakes. He has friends that are waterfowl hunters. He has friends that basically run the whole gamut of the whole thing. That is just a moot point. He asked if there were any more comments, twice.

Mr. Page said you do not have to do something to understand the different types of resources. Those things just do not resonate all the time with him. He asked if there were any more comments. The floor is still open for comments if anybody would like to make a comment. No one spoke up.

Mr. Page noted that Mr. Perry's comments were very well put together and thoughtful. He thinks they echo the comments you sent to us in the email, if he is correct. Mr. Perry was part of this process, so he knows some of the ins and outs of why we made those decisions. We will talk about them in a minute when we get into the public comments. There being no more comments, we will move to number four on the agenda: Public Comments Discussion and Response with Changes to 2021 Draft Aquatic Plant Management Plan for Final Approval.

Mr. Page said the Council should have, in your packet, a list of the comments we received. He does not remember exactly how many, but there was a lot of stuff coming in that was basically cut and paste. He does not have problem with cut and paste. It is the easier way to say things sometimes. The funny thing about the comments is that we get a lot of comments from a couple of groups and then no comments from other groups. You never see comments from the water supply people talking about issues. He is surprised they did not talk some more about it this year because of the algae problems in several of our reservoirs. The Council should have had a chance to look over those. He looked through them again now, just to refresh his memory. He gave a brief overview of the points that were made by the commentors.

Mr. Page said he was going to go through these and address them. He told the Council members to feel free to chime in when they need to. He started with the grass carp objections. The commenters talked about why grass carp are bad and the numbers we are using. They talk about carp being invasive and they are going to overwhelm the water body and be released into the wild. Grass carp that we put into the lakes in this state are sterile. They are checked multiple times at multiple points along the way. The US Fish and Wildlife Service has certified them, as has our DNR grass carp lab. We are one of the few states, if not the only state, that will not let you stock grass carp in the state without them coming through our grass carp lab for checking. The process in which grass carp are created is not a breeding process. It is a process that uses pressure on the eggs to make them triploid. There is no chance of them reverting back, like some sport fish we have crossbred have done in the past. Our response goes back to the 10,000 grass carp. That is still below the mortality rate for that system. That means, every year, we are still losing fish. Going back to Mr. Perry's stuff, in 2015 (this should have been 2017), we had a big discussion about 14,000 fish or 8,700 fish at the time. Mr. Perry recommended 8,700 fish in 2015 (this should have been 2017), when he was on the Council. Larry McCord recommended 14,000. At the time, we discussed it and Mr. Page kind of came up with a compromise, what he thought was a compromise, to go to 10,000 fish. He plugged it into our little sheet. Right now, in that system, if we use Mr. Perry's numbers, we would have been sitting around 30,000 at the end of 2021. The system we are using now, we are sitting right about 35,000 fish. We have got about a 5,000-6,000 fish difference by stocking 10,000 instead of stocking 8,700. Now, if we had stocked 14,000, we would have been up in the 43,000-44,000 range. It is a far cry better than it would have been if we had stocked 14,000 along the way. He asked if we are at that point yet, to basically say we can settle in on something. In his professional opinion, no. He thinks most of the people know we are trying to get to that that one carp per six acres (1 to 6 or 1:6) or so. He thinks that will turn out to be a good number, but we do not know that yet because we are not down there. We are still trying to get there.

Ms. Moorer wanted to add to that in Mr. Perry's comments, he was talking about replacing maintenance and she thinks we get caught in the definition of maintenance. To her, how she defines it here at S-C, a maintenance stocking would be the replacement of mortality. Ten thousand is lower than that. We have been, and are, in agreement that we want to lower the grass population in the S-C lakes. We do want that. We want to do that slowly, so that we do not repeat what happened several years ago when the Council decided that we needed to stop stocking grass carp. When we got to the point in time when we needed to stock, we had to do a large stocking of 200,000 fish over 2 years. We do not want to be back in that same situation. At least, S-C does not want that for the S-C lake system. She does not believe anybody on the Council would disagree. Large stockings are a detriment to the system. She wholeheartedly believes that, and she believes that our staff, her team here, believes the same thing. By lowering that grass carp population slowly, and we are taking a very slow approach to decreasing the population so that we do not get behind if we do have a year of clearwater, taking into consideration the last several years we have had large weather events. There are a lot of things that we have to consider when we are talking about that. She knows Mr. Page just mentioned that 10,000 is less than replacement. Maybe we should change that wording in there from

maintenance stocking because it is actually less than mortality and we are lowering the population. Mr. Page is right, and she would say the same as him, that her professional opinion is that we can continue to lower that population based on what data we are seeing.

Mr. Page told the Council members, he does not see, and we have not talked that much about the future, but he kind of plans everything out for the next 10 years or so, to 2030. He sees next year being one of those years where we stair step down the numbers that we are stocking. We have had our fisheries biologist ask us to maintain stocking year to year, to be able to get a better population gauge. We have asked them to assess the health of the fish, and Mr. Kaczka has done a very good job of that over time. We have gotten better numbers than we have ever had out of those systems in the last 10 years, due to Mr. Holbrook and the fisheries biologist before him that retired. The next step is to ask our fisheries people to come up with another mortality study. He knows time is an issue with him sometimes, but he is willing to fund that study. We need to get a better handle on mortality. Mortality was all over the place in the early '90s. It went from as low as 20, 22, 28%, all the way up to 39%. The average that the United States (US) Army Corps of Engineers (Corps) settled in on at the time was 32%. We need to reassess that mortality rate again, to see if we are on the right track. We base everything on that 32% mortality rate. Right now, if we put 10,000 fish in that system right now, our total numbers for the year would be 35,956, which, in 160,000 acres, would be one triploid grass carp for every 4.45 acres. That is too low. That number needs to go up somewhere to around 1 to 6. He thinks the best time to do that is, once we get around that 30,000 range, which we are at. If we dropped that number off this year, if we did not put any fish in that system at all, you are down to 25,956 fish. You see the mortality working on the system at 32%. The mortality is about 12,000 fish per year, and we are putting in 10,000, so we are losing another 2000 to 3000 fish per year based on the information in the tables, which he will share to the group so you can see what he is looking at. He moved his cursor so everyone could see it. We are right here. If we drop it all the way out, this is the current year. We add in the fish before we create the mortality computation here to get that mortality out of the total. If we go with stocking no fish, we are down to 25,956, if you just going all or nothing. He knows that is not Mr. Perry's suggestion. He was not saying it was. The issue remains. If we do the 10,000, like we put in the plan, it would be 35,000 fish. He does not have all the data on this sheet for total vegetation, which he just has not put in there yet. Ms. Moorer can tell you; native vegetation was in the report she gave us. He asked her what it was for this year. Ms. Moorer said she can pull up the graph that has grass carp versus *Hydrilla*, but she thinks we were at 13.4% native coverage. She could pull up and tell you exactly. Mr. Page said he probably has it in his notes. It was 21,348 acres, 13.8% coverage. Ms. Moorer agreed and noted that 2019 was 14.4%. Mr. Page said you can see on his graph; he is showing 10,000. When he puts a number in, he just leaves it in to see what happens if we stay there. Next year, and he does not mean to be talking about next year, but he can see that number being down as low as 8,000 or less, probably less than that, probably 7,000 and gradually stair step down over the years. That drops you down to 2,800 (Editor's note: Mr. Page misspoke. This should have been 28,000.) in 2 more years. That number, he has not really calculated it out. He just has not thought that far ahead. He has been thinking about this year, trying to kind of get that 5-year plan in. Mr. Perry's comments were good because they do not say to stop all of the stocking. They say reduce

our number. He agrees with what Mr. Perry is trying to say and do there. He does not necessarily agree with all of Mr. Perry's characterizations of what we have done over time. We have got good numbers. He asked if everyone could see the spreadsheet.

Ms. Moorer said we could see the spreadsheet. She would add that in 2010 and 2011, when we were losing control, we were down to 20,000 fish. Mr. Page commented that in 2010, we were down to about 20,000 fish. Ms. Moorer stated in 2011, we were at 30,752 fish. Mr. Page said we started chasing in our tail during that whole period. We got too low to chase our tail and it turned into another event that was requiring a threshold stocking number instead of any type of maintenance stocking. We ended up stocking 330,000 fish, roughly, in a 2-year period, from 2012 to 2013. He is going to be the first one to tell you, that is too many fish to be able to balance that system out and not have to go through this process all over again. You can see where we went through this process and then we did not stock. When you have to stock a threshold level of grass carp and there is a 2–3-year lag to see results, you overshoot your mark a lot. We are trying to avoid that. That 20,000 fish in 2010 was right at 1:8. It was 1:7.926. The S-C lakes are unique because they are two separate lakes that we try to combine into one. We cannot really manage them separately because they are so connected. It is a catch 22. Once we get into some more discussion about this, we will come back to it in a minute. He asked if there were any other comments from the council.

Ms. Moorer said we have water quality data if we need to talk about turbidity and impacts of turbidity on native vegetation. We broke that into two-time groups, 2011-2015 and 2016-2020. There is a statistical difference between the two. Mr. Page said Terminator day affects all vegetation, more specifically native vegetation more so than *Hydrilla*. *Hydrilla* is somewhat set up to basically use waters that other plants cannot grow in at times. It is a little more low-sunlight friendly than most species.

Mr. Page is going to roll through this thing quickly and then we will get into specific sections of the plan. Regarding the objection to treating native species, we do treat native species. Most of the time, they are only treated in limited instances for access, navigation, and preventing water intakes from being blocked. Last year, S-C treated 12 acres of native vegetation for that reason. Ms. Moorer noted four and a half acres of that was submersed native species. Mr. Page noted we have treated some negative vegetation specifically for the SC Waterfowl Association (SCWA). We are in talks with the Ducks Unlimited (DU) folks about treating some more on the upper part of Lake Marion. Cutgrass is a native species in the lakes, which comes in to take back what you took away from Mother Nature when you build a lake out of a marsh or a river.

Mr. Page responded to the request to stop spraying poisonous herbicides and chemicals. Some people still view them that way. Aquatic herbicides are some of the cleanest in the world. Terrestrial herbicides are worse for you, your health, and other things, and have more runoff potential than the aquatic herbicides. There are no restricted-use aquatic herbicides. Since the innovations in some of the herbicides now, they are physically gone from the system in less than

a couple weeks, some of them a day or two. Some of them still hang around longer. The claims about glyphosate got hung up in some of those issues. We do not use a lot of glyphosate. We do use a little bit. That claim was found to be not truthful. There are newer products out there in the last 3 to 5 years. We have had 2 or 3 new products that came on the market. One of them is very good and is gone in a matter of days. The other product was specifically developed for crested floating heart, and it was also very effective on *Hydrilla*. It was not effective on the native species like pond weeds and *Vallisneria* (val or eelgrass). Now, when you spray an area that contains a mix of *Vallisneria* and *Hydrilla*, you can kill the *Hydrilla* and not kill the *Vallisneria*. That is where a lot of the *Hydrilla* was hiding itself, among the val and other native species.

Mr. Page said letting the ecosystem behave as it naturally would was another issue that was talked about. Our response is there are very few natural lakes. There are no large natural lakes in South Carolina. Mother Nature's tendency is to try to return those to the rivers they once were by filling the lakes in. You all know that, if you have ever had a farm pond, especially if they get as old as some of these lakes. Mr. Perry should be quite familiar with that down on the coast with impoundments. You have to do some dredging and things, and SC has not done a lot of that over the years. Our lakes are becoming very mature. They are starting to cause some problems with different types of algae across the state being problematic to drinking water supplies. Having an excess amount of vegetation is worse than having no vegetation, in a sense, because it makes more vegetation deposit. You get more dead vegetation that degrades in the lake and forms a detritus layer, which is where all the nutrients come from.

Mr. Page reported one commentor requested we remove *Hydrilla* from the invasive species list and consider it native. *Hydrilla* is a federally listed invasive species, which is included in 33 individual states' regulations and Canada. It is very problematic, if not controlled. The biggest problem is that once it is there and you kill it back, but you have got a tuber base. There was a lot of early research on this tuber base that said the tubers, the root system basically, were viable for four or five years. NC State University has recently done some studies that show viability to be much longer than that, up to 10 years or more.

Mr. Page responded to the comment that carp stocking is feeding the growing cormorant population. Most of the information we got on that is that the cormorants are eating fish that are less than 6-8 inches long. They are not going after a 12-inch-long grass carp. They are not necessarily feeding on grass carp, per se. You do not see any technical documentation that that is a true statement, but it could be. He is not going to say it is not because there has only been limited of research on that. They normally eat the smaller fish.

Mr. Page addressed the idea that the vegetation clogging hydropower and drinking water intakes is due to carp feeding and cutting mats loose. Way back in the day, when S-C had a hydroelectric intake that got clogged, there were no grass carp in that system. It was not because of that. There have been issues over the years with vegetation mats clogging water intakes, but a lot of those have been primrose, alligator weed, and water hyacinth, and now *Salvinia molesta* in

the S-C system. Most of that vegetation comes loose due to high water flows, not carp feeding activities, as they generally eat from the top down.

Mr. Page responded to the opinion that management has damaged the economy. The S-C lakes have been listed in the top 25 by Bassmaster for the past 10 years, and the number 23 on their recent list as best lakes in the decade. Lake Murray, Strom Thurmond, and Lake Hartwell fall in the best of the rest list for the Southeast. The 2017 numbers were latest we could come up with. There was \$2.74 billion in economic contributions to the natural resource-based sectors, which had grown by 15% over the previous 7 years. Although this is slightly dated and does not show the direct impacts to areas around the waterbodies, there have been recent reports of increases in outdoor activities during the COVID-19 pandemic, including boating, hunting, and fishing. He can vouch for that through our licensing department. There were more licenses being put out during a period when people had to have a reason to go outside somewhere. We even sold a lot of commercial licenses because at one point, like on Lake Murray and other places, the lake was closed to anybody but commercial fishermen, so people went out and got a commercial license to be able to get out of the lake and fish.

Ms. Moorer said that Mr. Kaczka is on the meeting and if possible, she would like him to share some information with the council regarding the sport fishery on the S-C system. There were quite a few public comments that had some claims about the fishery on the S-C lakes and he has some information to share with us. Mr. Page agreed and gave the floor to Mr. Kaczka.

Mr. Kaczka told the Council that he had a handful of talking points on our various sport fish populations. He knew that this has been a point of contention with the ongoing discussion of grass carp, and habitat, and the effect on our sport fish populations. Everything he is going over today, aside from what he will say is anecdotal evidence, is data from long term, standardized surveys. We have had surveys going on the S-C lakes for a number of years, decades in some cases. In the case of our winter gill-net survey, that has been going on since the mid-80s, so we are pushing 40 years of a survey where it has been done in a standardized fashion. This data is of high quality. The timeframe that we are talking about for this data is not something that is available to all states and all projects. It is very important to keep in mind that that this is really an objective look at this information.

Mr. Kaczka started off talking about our catfish population, blue catfish particularly, since that is what the catfish fishery has become on the S-C lakes. This is data collected from our winter gill-net survey. Our overall numbers that we have collected over the past 3 years have been higher than the previous 20 years of collection numbers. We are just strictly talking about numbers there. Prior to that 20-year period, although numbers were higher than what we are seeing now, that was dominated by, about 80% year after year, fish that were smaller, less than 20 inches. For 20 years ago and earlier, we really did not have the trophy component that we have now on S-C. We are also seeing currently, over this past 3 years or so, a steady increase of large blue catfish. Here, we are talking about fish larger than 32 inches. Not only our numbers up, but we are also seeing a steady increase of large catfish again, speaking to that trophy

component. There was a period in the in the mid-2000s, from 2006-2008 where we did have a similar occurrence of large catfish overall, but the overall numbers were down. You could catch those trophy fish, but overall, catching fish in general, among the catfish species, were few and far between. From an anecdotal standpoint, we have spoken to a lot of anglers at boat ramps and in meetings with the guide associations on the lakes. People are really happy with the current blue catfishery right now. As we speak, there is legislation in Columbia to reinstate the previous regulations, which will limit the number of catfish caught per day to 25, and only 1 or 2 over 32 inches. That is very popular among the catfish anglers in general, and the guide associations. It looks like that legislation is going to pass.

Mr. Kaczka talked about striped bass over recent years. Over the last 3 years, we have collected, total each year, between 335 to 355 individual striped bass in our gill net collection. Because this effort is standardized and the same year after year, where we have 24 net nights where we set, we can look at total numbers collect and not just catch rates. That number is right about 100 fish per year more than our 20-year average, which is 253 fish. Numbers wise, we are up with striped bass, as far as what we are seeing in our standardized survey. We are also seeing a pretty good increase of older fish in our survey, 7-8-year-old fish. We have even collected some 10- and 11-year-old fish. That speaks to being able to retain fish in the system a little bit longer. Older fish are typically larger, as you would expect, but that is not always the case. For the most part, it is encouraging to see that we are keeping fish in the system a little bit longer. We also are seeing currently, over the past year or 2, the highest growth rates of our striped bass than we have seen over the previous 4 regulation periods. What he means by regulation periods, is that since our winter gill-net survey started in the winter of 1984-85, there have been 5 different sets of regulations that have been enacted in regard to the striped bass population, as far as what you can harvest, size, numbers, et cetera. Our growth rates currently are higher than they have ever been, under our current regulations. As far as anecdotal evidence for the striped bass population, we speak to a lot of anglers every year at boat ramps. From an individual angler standpoint, as well as a guide standpoint, anglers are reporting a higher prevalence of harvestable size fish. They are catching more. They can keep more. Overall, from what we are hearing, they are happy. Our current regulations are based on that 23-to-25-inch slot limit with one over 26. If you compare those regulations, versus the previous regs, which were a minimum harvest of 26 inches, we currently are seeing about 7 to 26% of our striped bass that are collected as being of harvestable size. Compare that to our previous regulations, and that number drops down to only about 1 to 5% of the total population. Not only are there more fish out there to be caught, but there are many more that fall under the harvestable size limits.

Mr. Kaczka moved on to largemouth bass. As we all know, that is an extremely popular sport fish species on our lakes. Our catch rates overall, between Marion and Moultrie, are about 30 to 40 fish per hour that we see during our annual springtime survey. Catch rates are not generally a great way to measure the overall population but can be used to compare it to other systems. He can tell you that a catch rate of 30 to 40 fish per hour, on average, is a relatively high catch rate. In some areas of Marion and Moultrie, where the habitat is even more suitable for largemouth bass, we are seeing catch rates of up to 90 fish per hour. Our catch rates of bass

are very high. There is a metric in fisheries where you can take hard data, the numbers and lengths of fish, and assign them to a qualitative category. This can tell you if your system is overcrowded with bass, and you have a lot of really small fish, or if it is balanced and you have a good mix. The qualitative distinction, from the data we have collected over the past several years, is that both Marion and Moultrie fall into what is considered a big bass qualification. Not only do we see high catch rates, but we see a good number of very large fish. As Mr. Page said earlier, from an anecdotal standpoint, the popularity of lakes Marion and Moultrie is very clear among bass fishermen. If you go out there starting pretty much now and for some months into the future, you are going to have bass tournaments out there every weekend. As Mr. Page also mentioned, Bassmaster just listed the S-C lakes as being in the top 25 of the decade as far as bass fishing lakes in the country. He thinks that is worth noting again. That distinction is something to be proud of and speaks to our bass population.

Mr. Kaczka said the other sport fish species that he wanted to mention briefly is crappie. This is a species and population where there are more questions to be asked. In recent years, we have gotten some notes from anglers that have said that the crappie population is not what it used to be. The size and numbers are not quite there. We currently do not have a study dedicated to the crappie population on our lakes. All of our data that we are getting currently is gotten by way of our winter gill-net survey, as well as our springtime, largemouth bass survey. Between those two things, we do get a good bit of data. We just do not have a dedicated season where we study the crappie specifically. One thing that we have seen over the last several years is that our crappie population, after doing some age estimates and pulling otoliths on these fish, our crappie can live on our lakes for about 4 to 5 years. It was previously thought that the lifespan of a crappie on our lakes was about 2 to 3 years. With that new evidence, we are going to start visiting some crappie tournaments on the lakes to collect some tournament source data. We are trying to increase the amount of data we have on these populations and incorporate a dedicated survey for crappie. From the information we gather, we are going to revisit our population and see if there is any data that warrants revisiting our current regulations to promote both the numbers and size of our crappie.

Mr. Kaczka noted that, all of our data from our standardized surveys is pointing towards our sport fish populations actually being quite healthy. He just wanted to provide those comments because he knows that is something that has been touched on several times through public comment.

Mr. Page asked Mr. Kaczka if he releases a report every year. He is pretty sure that is done internally. He asked if that report is ever released to the public for populations and stuff of fisheries. Mr. Kaczka responded that they write up an annual report of all the surveys that we get involved in. We submit that to our executive office in Columbia. He believes all those annual reports, out of region four and throughout the state for all of our programs, are available to the public. He was not sure if they are published directly on our website, or if members of the public need to request that through our executive office, but all those reports are available to the public.

Mr. Page asked Mr. Kaczka if that is broken down by regions or is broken out specifically by lakes. Mr. Kaczka responded with as far as the sport fish populations go, it is broken down by regions. What folks would want to look for is the region four annual report. Within that report, it is broken down by specific study, whether it be the winter gill-net study or species specific. Mr. Page stated he had seen those. He just did not know how available to the public they were. Mr. Kaczka stated they are all available to the public. He is less sure about the format and if it is published online. He thinks that currently they may have to make a request to the executive office, but he knows that they are available.

Mr. Page said let us talk about a study for grass carp. He knows you are doing the survey for us now to determine age class and health. He knows that is time consuming because of having to dig those otoliths out and then look at them under a lens to count how old the fish is. You give us a little minor report on that. He asked Mr. Kaczka if he creates a report other than that stuff he provides to the Council.

Mr. Kaczka stated that all the reports that he gives to you guys are the PowerPoint format. We do take that information and put it into written form for our annual, so it is put in there. Probably the biggest point that we struggle with the current grass carp survey is there is not a ton of information on grass carp mortality studies in the US. What is out there has been done on much smaller systems than S-C. He has gotten a good bit of information recently from a study that was done in Virginia. That predicted some fairly accurate mortality estimates with numbers collected similar to ours, but the size of the system was only about one-third of what S-C is. The issue in his mind is trying to collect grass carp in large enough quantities, from diverse enough areas among the two lakes, to get an accurate estimate. That is something that he is still currently working on, trying to come up with some ways that we can use what data we have on hand to get a better estimate. If at some point in the future, we may want to investigate increasing that survey. Rather than it be a handful of weeks a year or sporadically collecting, if we wanted to get some individuals involved from some of our local universities, he thinks that could be worth a conversation at least. Certainly, some more thought needs to go into that, as far as logistics and funding, and that is probably premature to discuss that today in any depth. Mr. Page stated that in the future, we can discuss that and figure out how we are going to maybe determine another mortality rate that is a little more current than the old stuff.

Mr. Page asked Mr. Kaczka if, when you are doing the health of the fisheries for the carp, it is easier to deal with data where we have a consistent age class and a consistent stocking level, more so than being all over the place. Mr. Kaczka stated yes. Whenever you are trying to determine population sizes and mortality estimates, one of the big factors that you must account for, in any sort of fisheries study, is recruitment rates. Basically, you do not know or sometimes you are trying to figure out with a population each year, of the spawning individuals, how many fish are surviving to a juvenile size and then surviving to adulthood. That recruitment number is very much an unknown with many fishery surveys. With sterile grass carp, this is kind of unique in that we know what recruitment numbers each year are. Recruitment is what S-C puts into the lake. If it is 10,000, we know that that recruitment is 10,000. There can be a handful during high

water events that escape the lake and go downstream, or they come in from other releases. That number is going to be so minimal that we have a good feel for recruitment. Being able to point each year to a set number is very valuable. Beyond that, having somewhat of a steady recruitment, which is to say that 10,000 a year or something similar, also provides value. Not only do you know your recruitment, but you know it has remained relatively constant. In short, what that is doing is allowing you to answer what would otherwise be a number of unknowns with a wild population that is not sterile.

Mr. Page had one more question for Mr. Kaczka while he is here. It was discussed in our past couple of meetings, and we went through the process, but some of our commentors were not at that meeting. One of the issues they talked about was the fact that there are too many carp, and the health of the carp was bad, since a relative condition was not equal to 1 on the scale that we had. He asked Mr. Kaczka to address that briefly, so some of the commentors that are here can hear that information.

Mr. Kaczka responded that there are two sides to that. The first side is he does not think anyone, and he could be wrong, necessarily cares about the grass carp themselves being in the system. They care about the effects they have on the vegetation and then subsequent habitat. From that standpoint, everything he just mentioned about our current sport fish populations suggests that they are all doing very strongly. There does seem to be suitable habitat for our various sport fish. From the condition standpoint, the body condition of grass carp, we look at a metric called relative condition. The aim is to see fish, among a sport fish population, one that you may be angling for, a body condition of 1. Basically, if their value is above 1, then that indicates that they are basically fat and healthy. If they are far below 1, they may be a little skinny, a little poorly conditioned, and they may be lacking some resources. When we collect these grass carp, we develop a relative condition estimate. The way we are talking about here, as it relates to vegetation, the thought is if they are 1 or above 1, then they are fat. There are a lot of resources out there. That would suggest that the amount of vegetation or forage they have available is high. If the number is far below 1, you might think that there is not a lot of forage to be had and maybe there is an overly large amount of grass carp for the amount of vegetation and forage resources we have. Fairly consistently, when we calculate our numbers, the grass carp we collect are below 1. The big problem with that is that you need some other metrics to put into that calculation. Those other metrics are based off a base population. That base population that we are using to compare our current grass carp to are the grass carp of the early 90s. When we are talking about the early 90s, when *Hydrilla* was a huge issue on S-C, essentially, we are comparing our current grass carp to those that had a buffet available to them. It would be inappropriate to make comparisons between our current population and that previous population. Another issue we have, to not go into too many details about how these numbers are collected, is body condition. Basically, in essence, what we are looking at is a fish's weight compared to its length. Previously, the way we were collecting grass carp is we would go out with a local bow fishing guide. We would collect them after dark, from around 8 in the evening to 11, midnight or so. We put them on ice, take them back to our office, let them sit there overnight so we can get some sleep and come and work them up the next morning. As they sit in those tubs, whether they

are still on the boat or sitting overnight in our cooler, they lose a lot of water weight. The problem with that is their length does not change, but their weight decreases. That may have been artificially underestimating their true body weight at the time of capture. What we are doing now is we are collecting them in house sporadically throughout the year, both within our regional staff, but we also have some staff from the upstate fishery staff within DNR that make regular trips down to S-C, bow fishing for their own purposes. We have talked with them and figured out a sampling method where a handful of times a year, they are going to come down and they are going to put their efforts into collecting grass carp for us. We are going to get some weight estimates, right at the time of capture or shortly after, so we can get a better feel for their true weight. He believes that when we do that, we are going to get a better estimate of body condition, which is going to turn out to be a little bit better than what was previously estimated.

Mr. Page asked if, with the amount of vegetation that is in the lakes, what you are saying is if those fish were predominantly feeding on native species, they would probably be a little bit higher relative condition than they are now, assuming they were still eating all that they can eat. Mr. Kaczka said something that people do not realize is that grass carp do not feed on all vegetation equally. It has been shown that that they are very effective at controlling *Hydrilla*. There is a lot of native vegetation, that are woodier than the soft *Hydrilla*, that they cannot feed on nearly as efficiently. They are going to tune in to those things like *Hydrilla*, and that is by far their preference. They do not do nearly the job of eating, feeding on and controlling our native vegetation than they do with those other, non-native species.

Mr. Page asked the Council members if they had any questions for Mr. Kaczka. Ms. Lognion thanked Mr. Kaczka for that report. That was awesome, and very informative. She appreciated his time and all the effort he made. It was nice to have someone explain the process to everyone. Mr. Page thanked Mr. Kaczka again and said we would talk about that mortality study later. We need that. We do not need to rely on something 20 years old.

Mr. Page picked up where he was while ago. Some issues have been corrected. One commentor said hyacinth and *Salvinia* should be added to the Hickory Top Wildlife Management Area (WMA) section. We should have put that in there. We did not put that into the changes that you have. You got a sheet that says, "Changes to 2021 Draft Since Posting." It should also include Hickory Top and add hyacinth and *Salvinia*. He will go through that real quick and then we will talk about the plan in groups of things.

Mr. Page said on page 21, Lake Bowen reduced the carp from 80 to 65. That stocking is basically a population issue for *Hydrilla*. It had carp when *Hydrilla* was in there in the early 2000s or late 1990s. More recently, the Lake Bowen staff wanted to put some in there to make sure they did not get *Hydrilla*. They were having a lot of other problems, with some algae issues in there, that they were trying to solve with some other things.

Mr. Page moved to page 34, Lake Keowee. He talked to Brett Hartis (Duke Power's aquatic plant management supervisor) the other day. We are talking about 125 carp in Lake

Keowee. Dr. Hartis said they did not really need any. They have not had *Hydrilla* in the past couple of years. There was a small, concentrated area of *Hydrilla* around a couple of boat landings. That is where we stocked them, so they have not had a problem.

Mr. Page said on Lake Murray, he made a mistake. Lake Murray should be 1,500 this year to maintain a population around 1:6. Adding 1,500 brings us to about 8,334 fish. That is a ratio of 1 fish for every 5.999 acres. Lake Murray is totally different from the S-C system, because *Hydrilla* was not established there as long. We did not have nearly as much of the surface area of Lake Murray covered. Therefore, it does not have the tuber base. We got some anecdotal information from talking to people and to a lot of groups at Dominion Power. During the flood in 2015, they had to open their spillway. We never have gotten a good estimate of the number of carp we lost. We assume we only had about 25% of them remaining out of there, which is about 1,500 or so left in that system. The original number at the beginning of 2015 should have been about 6,000. He knows no one counted numbers, but there was a significant number of them down in the area below the dam where they had opened the spillway. They washed up in a parking lot at Saluda Shoals, and it was covered. Most of the fish that covered that whole parking lot, which is a pretty good size, were grass carp. The same thing can be said for S-C, which opened some spillways to let some water out. We do not know what effect that had on the carp numbers. There is no way to determine that, so it is hard to guess. His guess would be those numbers in S-C are a little bit lower than we think they are. The Lake Murray stocking was reduced.

Mr. Page moved to Prestwood Lake. We put milfoil in there as being controlled. The carp were controlling milfoil after treatment around shorelines. That system pretty much has gone back to a good place and milfoil does not have the longevity of *Hydrilla* anyway. Now that we have a better herbicide, we do not need the carp in there.

Mr. Page said he added Hickory Top WMA. We need to make sure hyacinth and *Salvinia* are on that list in Hickory Top WMA. He thinks it has been treated this past year. He asked Ms. Moorer if most of the stuff this past year that was treated in there was still cut grass and remnants of other species. Ms. Moorer stated that was correct. In Hickory Top, it was cutgrass and giant salvinia.

Mr. Page noted that we have not put it in the plan, but DU wants to do some more work above I-95 to get rid of some cutgrass areas, like we did for the SCWA a few years ago. He thinks in some of those areas we did for the SCWA, S-C has gone back in there and touched up. He asked Ms. Moorer if that was correct. Ms. Moorer stated that was correct. The work on Hickory Top that we did with the helicopter this year was also a place that we did as part of the joint project with the SCWA a few years ago. We did touch up other areas by airboat. She did have someone else reach out to us about some areas. She thinks they are associated with DU. We are supposed to be talking with them soon.

Mr. Page noted we have also done some stuff. We have continued to work with our WMAs and be responsive to their needs. He thinks our biggest project this past year was a Sandy Beach area. In Stoney Bay, they wanted some of that vegetation out of there. A couple of years ago, we treated a lot of that vegetation. They saw a little bit of an increase in waterfowl. They wanted to come back 2 or 3 years later and then do it again, to treat and have more open water in those areas. That is still in the plan to do.

Mr. Page moved on into any discussion about the plan you need to have or any discussion about comments. We will try to answer questions, show you information, and do what we can do.

Mr. Marshall stated he has been reflecting on the comments that Mr. Perry provided us. In his early days on the Council, he remembers being part of that decision about how to set a course for the S-C lakes in terms of stocking. He remembers that discussion where we were looking for a number. You (Mr. Page) addressed a span of like 14,000 fish to what he thinks Mr. Perry was proposing, 7 or 8,000. He remembers appealing to you for your thoughts on it, and he supported you with the 10,000-level stocking. He recalls our thinking at that time was to find a number we could feel comfortable with and pursue that number over a number of years to have some consistency. As we established that consistent stocking, we would continue to monitor the system and try to understand what 10,000, or a consistent level of stocking, would do and how the system will respond. He thinks the Council has had discussions and Ms. Moorer continues to bring information to us every meeting about what S-C understands in terms of the balance of vegetation in the system. It is not like our attention has gone someplace else. We are still attentive to these issues. He thinks that trying to understand how it affects waterfowl might be a larger, more complicated question, but we can look at the fish that we are stocking, how the grass carp populations are trending in terms of your models and what information is brought to us from the monitoring that is done by Mr. Kaczka and his staff. Ms. Moorer has attempted to bring us vegetation data, which has been complicated through the system by the high flows in the system and sedimentation. There are a lot of complicated factors here, but he thinks we are trying to consider the balance of issues and the complexity of understanding what the data tells us. He continues to be supportive of it. He thinks we looked at 5 years of stocking at 10,000. He asked if this is the 5th year coming ahead. Mr. Page stated yes, this is the 5th year.

Mr. Marshall noted that he heard you (Mr. Page) reflect on that a little bit in terms of thinking about maybe lowering the number next year. He is curious as to how you are thinking on that, as you take all the information that we consider in these decisions. He asked how you are thinking, and why are you thinking about the number you put out there.

Mr. Page said he was just throwing numbers out there, to be honest. He thinks eventually we need to stair step down. We are going to get to a point where, even with 10,000, we are going to get right on that cusp of not really doing maintenance stocking, in the sense that our numbers are going to kind of plateau out. If we kept 10,000 in there for 10 more years, if we did it out to 2030, which he does not want to see, we are plateaued out around 1:4 or 1:5. We want to be

higher than that, or actually lower than that, in the technical sense. He still does not believe that 1:8 is the right number, because bad things happened when we were at 1:8. He thinks 1:6 or 1:5 is that magic number. One carp for 4 acres is about 40,000 fish, and 1 carp for every 5 acres is about 32,000 fish. We are somewhere halfway between that now at about 4.5, 4.6 actually. If we put 10,000 fish in, it will be 4.45. This is based on 160,000 acres. There has been some dispute over acreage in S-C being 160,000 versus 170,000. This is an open-ended system. It could be unique in that sense. He thinks we need to stair step down. He thinks we are narrowing in on that level that we need to have. He thinks that 1:4 still may be slightly too high. He does not want to jump year to year to year and do lower numbers every year. He wants to hit a number and then use that number for a couple of years at least, to eliminate that lag. Then we look at those numbers and we say nothing bad has happened, even though we have been through a variety of environmental effects, high water, low water, and all kinds of things. That is the key. That is a bigger key to not stocking fish sometimes, is what that system is doing on its own. High waters, high turbidity, low water, low turbidity can be a boon for either natives or can be a boon for *Hydrilla*. It can also be a problem for *Hydrilla* and can be a problem for natives. We need to kind of start to lower that number and become razor focused on trying to get to that edge that Mr. Perry and those guys are talking about. That balance where, from year to year, it may fluctuate slightly, but it does not take off and run. Eventually, we are going to have to get there. He did not know if he was explaining it clearly enough. He asked if that made sense.

Mr. Marshall stated he guessed it does. He is thinking that we are at the place that we have gone 5 years, or we will have gone 5 years after this coming one with this 10,000 level. He thinks that the challenge to us is to focus again, as best we can, on all our data sources to determine what is our target stocking going to be going forward. We need to try to understand what the data tells us now, what we have always been gathering and try to figure out how to go forward. If that means dropping it, as your gut seems to be telling you, we could start going a little lower, but we need to look at all our data to guide our decision.

Mr. Page noted we are going to need the new hyperspectral surveys for coming year. He asked Ms. Moorer if her vegetation surveys included woody vegetation. Ms. Moorer responded that it does include some in that in that final percentage. We do look at some species. She asked if when he is talking about woody vegetation, he was talking about cypress, tupelo, and things like that, or was he talking about primrose and alligatorweed. Mr. Page stated he was thinking more so cypress and tupelo. He did not think they included a lot of those in their vegetation number but asked for confirmation. Ms. Moorer said some are in there, but not all of Sparkleberry is in there. She noted that when we are doing the satellite imagery, we are mapping 159,500 acres. Mr. Page stated that basically Sparkleberry does not include any of the tree species and shoreline tree species are not included in there either, but some of the woody vegetation could be important in a sense. He asked if they break out buttonbush. Ms. Moorer stated we do, but that is all grouped together under native shoreline. That would be your sedges, your grasses, and buttonbush. Anything that can be seen and is not under the tree canopy is included in that. Whenever we are talking about the satellite imagery, the hyperspectral stuff that

she is presenting to the Council, it is solely just what is collected from satellite. Mr. Page said he is just trying to clarify that.

Ms. Moorer stated she thinks there was a question on that last time. She may have mentioned about boat surveys. We do boat surveys. That data is collected, sent to our contractor, and used as ground truthing data. We are not going out and collecting more information, like polygon wise and adding to the acreage. The acreages that you guys are seeing that she is presenting to the Council with the percent coverages, is solely hyperspectral. That does not mean that we do not do boat surveys as well. That is a lot of the other stuff that she presented to the Council, including pure points of where we collected, what we are seeing distribution wise across the system, videos, pictures, and similar things.

Ms. Moorer spoke to what Mr. Marshall was saying. She agrees with him on continuing to look at all the data and at some point, we should get to a true maintenance stocking, with the true maintenance meaning replacing mortality, whether that is 8,000, 7,000, or 10,000. As we are now, we are slowly decreasing the population by stocking 10,000. At some point, we need to find that balance there that we can have a small population of grass carp to keep *Hydrilla* suppressed. She is not a believer that we will no longer have *Hydrilla* on the system. We will always have *Hydrilla* on the S-C system at some level. We need it at a low enough level that we can control it and it does not out compete our natives.

Mr. Page said, back in 2017, when Mr. Perry and Mr. McCord were discussing the two points of view, 14,000, at the time, seemed a little too high to me. Mr. Perry's 8,700, he liked and did not have a problem with that as much as he did the 14,000. The 10,000 was a compromise back then. As he said earlier, the difference between those 8,700 back in 2017 and the 10,000 today, basically amounts to about 5,000 fish in the system today. Instead of being right around the 30,000 mark, we have 35,000 roughly. The Council was listening to him. Thank you because he knows he rambles.

Mr. Page asked if any other Council members had any questions about anything, discussion, or responses. He asked if we all kind of agree with the original changes we proposed. They were minor. The changes to the 2021 Draft since we posted include Lake Bowen, Lake Keowee, Lake Murray, Lake Prestwood, and Hickory Top WMA, which was not added in there. He asked if anyone had any problem with those. There was some good information there.

Mr. Page said he has a chat going on regarding Lake Greenwood. We spent so much time on S-C, he will talk about Lake Greenwood some. Val is still there in spots. The val that was treated a couple of years ago was treated because it was blocking an area that was a high use area by homeowners. There was no access to boats in that area, which was one of the reasons Lake Greenwood suggested to treat that. They called us to help them. They have their own program, kind of like S-C. When they have a major problem, they call, and we will work through the issues with them. As a matter of fact, instead of treating last year or the year before, he asked Ms. Moorer what year it was when they went in and pulled val out of Lake Greenwood. Ms.

Moorer stated 2019 was when they did the first val project, and then 2020 they did water shield. Mr. Page noted that in 2019, Lake Greenwood residents were still complaining a little bit in a couple of coves. Ms. Moorer, her staff and staff from DNR went down there and removed some of that vegetation out of those developed coves. They transported it to S-C and planted it. They also planted some on Lake Hartwell. That was a good little process. Instead of killing something, it was gotten out of there and utilized in another place.

Mr. Page said he needed to look at the plan quickly and see what is listed in the plan. Right now, there is some of the stuff in the plan that are remnants that could be problems that pop up through the year. He does not think we have any real plans to treat val in that system this year. He pulled the plan up quickly to tell everyone exactly what we have in the new plan. He noted that we leave a lot of stuff in there just in case we have the need for it. Sometimes it is not needed from year to year, based on the conditions. In the Lake Greenwood section, val is still listed of the problem plant species. You will see the major management objective is to reduce *Hydrilla* growth throughout the lake. We have stocked 300 sterile carp yearly and are trying to maintain a 1:5 ratio. He thinks that number is down this year. He told Ms. Holling that we might need to edit that, too. He asked Ms. Holling what he told her for Lake Greenwood when we were sitting down and talking about it. He asked if it was 300 or less. Ms. Holling responded that he said to leave it at 300. Mr. Page stated he thinks that was a maintenance number. Ms. Holling said she believes that is correct. Mr. Page stated he could pull that sheet up, too. The plan does give an option for *Vallisneria* and it gives the herbicides to be used for that, which are copper or diquat. If the Council wants us to remove that, we can remove it. We may have to come back to you later if high maintenance public areas have problems. The one place where we mostly did the work on Lake Greenwood was a narrow cove that was like a pencil. It kept getting narrower the further you went back. Once you got past the second or third dock, the people in the back basically had to cut their way out every year.

Mr. Page noted that Mr. Deal is chatting with him online. One of Mr. Deal's comments was to ask if we could update the replanting in coves on Greenwood that do not have large amounts of residents, as what little is on the lake is very beneficial. Mr. Page said that makes sense. The next time that issue arises, we could potentially do that. We could replant in the coves in Lake Greenwood. We can move it out of those coves and replant it in some of those open natural areas. That is a great idea. He likes that idea. We do not have anything about replanting in the plan. Maybe we should put that in there. If doable, *Vallisneria* should be moved to other natural areas of the lake. Replanting that eelgrass is a good idea. Ms. Moorer asked if we could also look at saying that native species would only be treated if they were impeding public access. Mr. Page stated that makes sense to go through the whole plan and do that. That is another change to native species. Ms. Moorer noted that was a suggestion for the S-C section. She thinks that unless it is causing an issue with public access, drinking water or anything like that, that we should think about not treating native vegetation. Mr. Page agreed. Ms. Holling asked, regarding that comment from Mr. Deal, if that means he is volunteering to help coordinate the assistance in moving that plants. Mr. Page asked Mr. Deal to send a chat back if he is volunteering to help move those plants. Mr. Deal messaged back that he would very much help.

Mr. Page said we have periodic discussions with Lake Greenwood about some of their natural areas. They are required to have so many natural areas in that lake where they cannot develop, and they cannot eliminate some of the vegetation. He has been pushing them lately to protect those areas in the back of those coves, even if it is restricted to fishing or anybody going back there with a boat. He has told them that some of those areas need to be left alone unless it is a highly invasive species. Some of these back water areas that get very shallow are good fish nurseries. A little bit of vegetation is good. Some of them have a good bit of vegetation in them and they have extended that from the shoreline into the water column a good bit.

Mr. Page said that is another change he would like you all to consider in there, that native species be treated only when public access or drinking water intakes are significantly impacted. He tells the people at Lake Murray all the time. We have had some native species coming back in along the shoreline and everybody wants us to go treat. He tells them it is not a swimming pool. It is a natural system, and we are in the business of habitat to a degree. It is not affecting them. Some of the large coves that get blocked off by that vegetation, we would be glad to help treat. Other than that, they are just going to have to live with that. They are on a natural system.

Mr. Page said we have the same thing with Lake Greenwood. We have had some discussions with homeowners up there, and they were not very happy with us after we talked to them, because we told them they really did not have a problem. Their swimming, dock or ramp area was not really affected by a species that was 15 yards offshore. We really do have that mindset. The homeowners, especially up in Lake Murray, want everything to be glassy, clear water like a swimming pool. He tells them they do not live on a swimming pool; they live on a natural system that was not going to be maintained like a swimming pool.

Mr. Page noted that we need to figure out a place to put the val. We can put that statement about moving it specifically in the Lake Greenwood section. We cannot do it statewide. We just do not have the manpower to be able to get that pulled off. Ms. Moorer and her staff are spread thin, too, and they are not going to come. They would probably come to help if we needed them to come out, but they cannot designate resources to do something on another lake. He asked if Lake Greenwood was kind of now S-C's power plant again. Someone responded that it was Duke Energy's. Mr. Page said Duke would have to get some resources up there to help us. He wants to say that will not happen.

Mr. Page said he would add those two items to the plan, if that is what you want to do. You all get to vote on these changes. If you want to discuss the number of the carp in any of the areas, even S-C, if you all think those need to go down, please speak up now and we will discuss them, change the plan, make those additions, and get on with our business. He is assuming that the plan is good except for the minor changes we discussed. He asked if everybody is okay with that and if there was any more discussion about any of this.

Mr. Page read Mr. Deal's chat, "I would help and know several that would help move or replant vegetation. All we need is permission." Mr. Page thinks that permission can be gotten quickly as long as we are moving the natives and moving them within the system. You cannot bring anything else in from another lake because it may take off and be more of a problem. We are going to have to bring in the homeowners, too, so they do not get mad, even though they do not own the water. We do not want them discouraging you from utilizing the area in front of their house to be able to do that. He told Mr. Deal that we are going to put him to work. We are hoping we got enough to put you to work.

Mr. Page stated the floor is open for any other discussion on the plan, any changes and any comments to the comments section. Mr. Marshall stated that he was fooling around with his buttons and managed to lose the sound feed. He confirmed that he had not missed anything.

Mr. Page noted that Ms. Moorer had chatted with Mr. Deal and offered to share S-C's written plans and lessons learned from the 2019 val and 2020 watershed projects they did on the S-C lakes, moving those specific species around in the S-C lakes. Mr. Page said the biggest thing about the val on S-C and one of the reasons he wanted Ms. Moorer to do it at time, was we had an outbreak of *Hydrilla* in Greenwood. Her staff are very conscientious and had been trained to look for those *Hydrilla* tubers in the val they were moving. They did not move any *Hydrilla* with that val, which was the biggest issue.

Mr. Page was looking for a motion to accept the changes, those that we had printed out and the additional changes to Hickory Top WMA adding hyacinth and salvinia, native species treated only at public access and/or drinking water intakes with significant problems and moving val to other areas, specifically in Lake Greenwood, transplanting val when we can move it. We have needed to treat it in high traffic areas. Instead of treatment, move it from those high traffic areas to other areas of the lake, where it can be a more native component with no homeowner issues or traffic issues. He is looking for a motion to make the changes we have talked about here to the draft plan. Ms. Lognion made a motion to move forward with the changes to the draft plan. Mr. Page stated he has a motion on the floor. He asked if he could have a second. Mr. Simmons seconded the motion made by Ms. Lognion. Ms. Holling asked the Council for clarification. She asked if that was to approve the plan with the changes discussed or just to approve those changes. Ms. Lognion said it was to approve the plan with the changes discussed.

Mr. Page stated that motion was to approve the plan with the changes mentioned. He asked if there was any discussion. He started the discussion by reminding Council that approving the plan means 10,000 fish into S-C and the other stockings will be as discussed or listed in the plan. He has a motion on the floor. He asked again if there was any discussion. There being no discussion, he called for a vote and asked Ms. Holling to do a roll call vote. She did. The results were 8 'yea,' and 0 'nay' or 'abstain,' so the motion passes.

Mr. Page stated he knew it had been a long meeting. He is still looking forward to being in back in a room with you, so we can discuss stuff face to face, and we can see facial

expressions better. Sometimes there is that seed of doubt that may be there. Online, you sometimes go along to get out of these meetings. He asked if there was any unfinished business that the Council must do on any of these last issues. He said we would redo this plan. Before we send it out, we will highlight the changes and send you a link to a copy of it before it is posted to the public so that you can make sure we got in there what we need to. We will try and get the minutes to you a little bit earlier than the next meeting. He would really like to have a face-to-face meeting and a field trip sometime in the mid- to late summer or early fall. We have missed that. We need to get out and look at some of these systems so you can see some of this stuff. Most of the time, we end up going to S-C because they have more boats. Between us and them together, we have enough boats to be able to get people around. He briefly discussed the reasons that might be possible and assured everyone that all protocols would be followed if we are able to have the next meeting in person.

Mr. Page said since there was no unfinished business, he asked if there was any new business for the Council. He noted we need to get with Mr. Kaczka, have a Council meeting that includes him, and discuss plans to do a survey of those grass carp again. We will continue to do the relative condition survey. Mr. Page thinks Mr. Kaczka has already been funded for this year. We will see if we can get him to do a mortality survey for us, so we have a better mortality ratio. He reviewed the various mortality surveys that have been done over the years by the Corps and Virginia Tech (VT), which are either dated or cannot be applied well to S-C, due to its uniqueness.

Mr. Page asked if there was any other new business for the Council. Mr. Marshall stated he would just add to what you were just saying about focusing on the data, fish mortality and such. Based on earlier discussions, we need to think through how we are going to address any resetting of stocking in the S-C lakes of grass carp. If we are going to reset, we need to have our rationale for doing that. Mr. Page agreed. He thinks we need to have all that data in a vegetative analysis that Ms. Moorer and those provide us through the satellite imagery. He noted the advantages of using the satellite imagery.

Ms. Moorer stated that helps us navigate around large weather events, as well. Hopefully, we will not miss a year, as we have done some in the recent past. Switching to satellite has its challenges, but there are also a lot of good things about it. We have to continue with satellite, so we can keep that consistency. In switching from fixed wing to satellite, there are some differences. As we move forward, they can recognize those differences. The data will be more consistent from year to year and the more years we do it, the better.

Mr. Page noted that if you need help with ground truthing, he thinks our staff can be available to help you do that. Ms. Moorer stated she appreciated that. She thinks the guys in our team are on the lakes every single day unless there is a small craft advisory. She thinks their biggest challenge is boat surveys where we are looking under the canopy and are able to collect polygons and not just points, so that we can look at it separately. We can have hyperspectral acreage and then we can have boat survey acreage. Prior to her being on the Council, there was a

lot of discussion about what an acre is and if it is topped out or not topped out. We are just trying to get some consistency here. If we are going to do hyperspectral imagery via satellite, then that is what it is. We are removed from that. A third party provides it to us. Then we will have separate boat surveys, as well. We will have run through some points in there as well, but we will be looking under the canopy in areas where that satellite imagery is not giving us the data.

Mr. Page stated he may be speaking out of turn, but he thought that fisheries and WMA staff might be available to assist in ground truth efforts and suggested approaching them about it. Mr. Simmons said he would check with his guys and see what we can do to help. Mr. Kaczka stated we would be glad to help. Mr. Page thanked them both. We really appreciate it, and S-C appreciates it.

Mr. Page said he knows S-C has got a lot of stuff they got piled on their plate. He did not realize they did as much as they do sometimes. Ms. Moorer was out changing oil in a transform the other day. Ms. Moorer stated she was sampling transformer oil, not changing it out. We sample transformer oil at all our generating facilities, test water quality, do our Federal Energy Regulatory Commission fisheries projects, and do aquatic plant control. We appreciate the help. Our team is out on the system every day. We do have members of the public reach out to us and share, especially when they find invasive species. That has been a great help as well.

Mr. Page noted we have a position we are going to post in the next couple months for a tech two, which is an entry level position. He asked everyone to share that with anyone they know that might be interested, although we might have to post it in-house first.

Mr. Page asked if there was any more new business. There being none, he called for a motion to adjourn. Ms. Moorer made a motion to adjourn. Mr. Page stated he has a motion to the adjourned and asked for a second. Ms. Lognion seconded that motion. Mr. Page said we will not do a roll call on the adjournment. He asked for everyone in favor to signify by saying "aye." The Council members present said "aye." Mr. Page asked if anyone was opposed. No one responded. Mr. Page stated being there is no opposition, this meeting is adjourned. He appreciated your time and your patience with our technical issues. He thanked everyone. For all the people that just came in and listen, thank you for coming. Several Council members thanked Mr. Page. The meeting adjourned at 12:18 p.m.