

118th Meeting of the South Carolina Aquatic Plant Management Council

Attendance:

Council Members: Chris Page, Larry McCord, Bob Perry, David Wannamaker, Stan Hutto, Marc Cribb, Jeannie Eidson

Guests: Daniel Hood, Chip Davis, Clark McCrary, Scott Lamprecht, Michael Hook, John Grant, John Morrison

Location: SC State Farmers Market

Call to Order: 10:14 2/18/14

Minutes:

Mr. Page brought the minutes of the 117th meeting of the South Carolina Aquatic Plant Management Council (SCAPMC) before the board for approval. Mr. McCord asked Mr. Page if the 1995 occurrence of *Salvinia molesta* in Colleton County was indeed the first recorded occurrence in the United States. Mr. Page confirmed that the 1995 occurrence was indeed the first recorded in the U.S. Mr. Page informed the council that the detail of the SCAPMC meetings is and has been important, so that past meeting discussion could be reviewed and analyzed without the need to rely on memory. Mr. McCord requested that the statement on page 9 "Mr. McCord stated that CFH was probably the largest treat to native SAV" be changed to read "threat". Mr. Perry moved that the minutes of the 117th meeting be accepted, Mr. Cribb seconded, and discussion of the minutes continued. Mrs. Eidson requested that the statement "Mrs. Eidson believed that historical cessation of stocking was a mistake" be changed to read "historical cessation of maintenance stocking was a mistake." Mr. Page called for any other amendments to the 117th meeting minutes. No further discussion was brought before the board. A vote to accept the minutes, as amended, passed unanimously.

Mr. Page called Scott Lamprecht to present his findings on grass carp condition in the Santee Cooper lakes, mentioning that Santee Cooper will present their vegetation survey findings after Mr. Lamprecht has finished his presentation. Mr. Page made mention that all sections of the annual aquatic plant management plan were not brought before the board. He stated that only sections of the plan that were changed for 2015 were brought for review during the 118th meeting. Mr. Page stated that Mr. Hook had been before the Wildlife and Fisheries Advisory Committee, which encompasses the Waterfowl Advisory Committee, concerning the function of the SCAPMC and grass carp stocking on the Santee Cooper Lakes. Mr. Page informed the council that Mr. Hook had discussed, in detail; the history of *Hydrilla* in the Santee Cooper Lakes, historical grass carp stocking, and the science on which those decisions were based. Mr. Page gave the floor to Mr. Lamprecht.

Mr. Lamprecht informed the council that he has been with SCDNR for 30 years, 28 years have been spent on the Santee Cooper system, and that his working title is a Fisheries Biologist. Mr. Lamprecht began his presentation by outlining key definitions in relation to how he would use them in

his presentation. Mr. Lamprecht began by stating that his definition of “acres of coverage” will be referred to in terms of submerged biomass with regards to “only the main part of the lake, not sub impoundments” in the Santee Cooper system. Mr. Lamprecht stated that “elimination of *Hydrilla* from the water column equals suppression”. He stated that “grass carp suppression or maintenance density is equal to one carp per 8 acres” as published in peer reviewed literature based specifically on the Santee Cooper system. He clarified that acres refers to surface acres as opposed to acres of *Hydrilla*. Mr. Lamprecht mentioned reading the plan and noticing the statement that SCDNR planned to stock extra grass carp to account for *Hydrilla* as well as other SAV. Mr. Lamprecht stated that “we want that other submersed vegetation.” He stated that once *Hydrilla* is under control, SCDNR should not add additional grass carp. Mr. Lamprecht discussed the tipping point at which *Hydrilla* is controlled and grass carp are left with an unsustainable amount of food in the form of *Hydrilla*. Mr. Lamprecht continued to his next term, “surplus herbivory” which he defined as “the difference of the current population estimate and the number of carp needed to maintain the suppression of *Hydrilla*.” Mr. Lamprecht used the population of grass carp in the Santee Cooper lakes last year as an example to show that numbers are currently much higher than the 1/8 acres suggested for maintenance levels. He moved his topic over to biomass of *Hydrilla*. Mr. Lamprecht explained that he assessed the relative condition of grass carp as an indicator of biomass of *Hydrilla*. Mr. Lamprecht explained that his condition factor “ K_n ” was derived by the observed weight of a sample carp divided by the standard weight of a fish with the same length. Mr. Lamprecht stated that a K_n value of near or above one indicated that fish had a readily available food source, but that K_n values significantly below one indicated that food availability was less favorable. Mr. McCord asked Mr. Lamprecht to define what he means by “near one”. Mr. Lamprecht replied that “near one is maybe .95 to 1.1, right about that area, it is relative.” Mr. Lamprecht continued to explain that standard carp size was arrived at by analyzing a sample of carp in 1994, when *Hydrilla* was plentiful in the system. Mr. Lamprecht stated that the sample of carp was taken during the summer of 1994 as shown by Phil Kirk’s data. Mr. Lamprecht explained that the sample carp over the years from 1994 to present were taken by archers during the summer growing season, but the archers, as well as methods of fishing effort vary from year to year. As a result, fish taken in recent years tended to be less average length. Mr. Lamprecht explained that no data was obtained for 2014. He stated that he set out to electrofish carp on the 19th of December at Big Oak Landing. Mr. Lamprecht shared that using two boats for 1.5hrs each, 20 grass carp were collected. Mr. Lamprecht mentioned that one of the 20 fish collected was deformed, so it was removed from the sample group. Mr. Lamprecht continued by explaining a plot of condition factor for the fish relative to length. Mr. Lamprecht explained that the smaller fish showed a better condition factor than the longer fish. He reminded the board that the samples were taken in the winter as opposed to Phil Kirk’s data which was collected during the spring and summer growing season. Mr. Lamprecht explained that predatory fish tend to have a better condition factor in the winter months, but that no studies on herbivorous fish condition in winter months existed for comparison. Mr. Lamprecht explained that due to differing sample parameters, his winter data could not be accurately compared to Phil Kirk’s summer data. Mr. Lamprecht chose to compare his winter 2014 collection data to historic winter samples, many of which were based on limited sample size. Mr. Lamprecht mentioned that the 2010 data set consisted of a single observation, but the 2013 set included thirteen fish. Mr. Lamprecht made mention that years on his graph represent gill net years, which contain winter overlap that is contributed to the following

year. Mr. McCord questioned the lack of sample size listing for Mr. Lamprecht's graph with regards to data confidence. Mr. Lamprecht replied that sample sizes were not large and were variable, so the data was not as robust as he would like for it to be. Mr. Lamprecht continued his analysis of the grass carp data, explaining trends of decline in the winter of 2014. He then explained that although the sample sizes were generally small and inconsistent, we can still see trends and draw conclusions from the data. Mrs. Eidson asked Mr. Lamprecht about sample sizes from specific years listed on his figure. Mr. Lamprecht explained that sample sizes for his figure data ranged from one to thirteen. He explained that several factors other than specific studies of carp in winter conditions could be examined to determine SAV biomass including: summertime carp by-catch, cleaning rates of water intake grates, cleaning rates of fish passageways, downwind shoreline observations of plant detritus, objective angler observations, etcetera. Mr. Lamprecht expressed that his observation of decreased coot population could be indicative of a lack of *Hydrilla*. He continued by adding that the grass carp condition study was the most reliable source of data currently available for measuring submersed aquatic vegetation biomass. Mr. Lamprecht began a discussion of the total estimated number of grass carp in the Santee Cooper system. Mr. Lamprecht stated that the estimated number at the beginning of 2015 was 137,000 carp, well above the number required for maintenance of *Hydrilla*. Mr. McCord called attention to the fact that the 137,000 figure was the figure for the beginning of 2014 and must be decreased by a mortality rate of 32% by the beginning of 2015. Mr. Lamprecht disagreed with Mr. McCord's analysis, and Mr. McCord returned by stating that he had the calculations in his presentation and that Mr. Lamprecht's statement was incorrect. Mr. Page interjected to state that the same population discussion was had twenty years ago with Miller. Mr. Lamprecht stated that the matter did not need to be discussed as the number is higher than maintenance level in either case. Mr. McCord returned by stating that he felt it was important to discuss the matter as it was information being presented and that Mr. Lamprecht had discussed that much of his data could be dismissed as non-scientific due to the fact that it is not from reliable sources. Mr. McCord and Mr. Lamprecht then returned to their discussion of population numbers. Mr. McCord explained that Mr. Lamprecht's population estimates were one year off, because they are beginning year estimates rather than year end estimates. Mr. Lamprecht stated that even if his estimates were one year off, there is three times the number of carp in the Santee Cooper system than that recommended for maintenance of *Hydrilla*. Mr. McCord stated that maintenance levels can only be applied when there is a beginning number of zero carp and zero growing *Hydrilla*. Mr. McCord explained that maintenance stocking is used to maintain a certain population of carp, and that we cannot simply arrive a maintenance population level immediately by not stocking carp. Mr. Lamprecht stated that he agreed with Mr. McCord but that he did not believe maintenance stocking should be continued until the population was more closely approaching a maintenance level. Mr. McCord disagreed with Mr. Lamprecht, and Mr. Lamprecht stated that "that is your (Mr. McCord) opinion". Mr. McCord stated that (continued decreases in stocking rates until maintenance level is reached as opposed to cessation of stocking until maintenance population is reached) is the opinion of most grass carp experts with experience of grass carp stocking for reservoir management. Mr. Lamprecht stated that he was a co-author of a peer reviewed paper stating that one carp per eight acres is the acceptable rate, and Mr. McCord stated that one per eight is an acceptable rate for the Santee Cooper system. Mr. Perry requested that Mr. Lamprecht continue his presentation and that remaining questions be held until the completion of his presentation. Mr. Lamprecht continued with his

presentation to explain that his concern was that over stocking of grass carp in 2015 could turn constituents away from the control method and result in the loss of grass carp as a tool for *Hydrilla* control. Mr. Lamprecht stated that he also believed that the contractual goal of 10% native vegetation cover in the Santee Cooper lakes would not be seen for many years if stocking were to continue. Mr. Lamprecht reiterated that the previous statement was his opinion, rather than a scientifically based statement. Mr. Lamprecht concluded his presentation and called for questions. Mrs. Eidson asked that Mr. Lamprecht return to his stock estimation slide. Mr. Lamprecht stated that the numbers represented on the population estimate slide were provided by Mr. Page and that some of the “noise” had been removed from the table by Mr. Lamprecht. Mr. Lamprecht stated that the maintenance population number of 20,000 fish was a “sit behind the desk number for maintenance control.” Mr. Lamprecht expressed that he did not want to begin stocking fish again for at least a couple of years, and that he would be in support of more fish if vegetation biomass supported that decision. Mr. McCord questioned Mr. Lamprecht as to which point he would agree with stocking again for maintenance. Mr. Lamprecht responded that he would not like to see stocking again until the population estimate was closer to maintenance levels such as it should in 2017. Mr. Lamprecht stated that if we see significant growth of *Hydrilla* in the next couple of years, then he would support stocking sooner. Mr. McCord asked Mr. Lamprecht what he would consider as significant growth of *Hydrilla*. Mr. Lamprecht stated that they have seen *Hydrilla* in the same areas as *Vallisneria* and that *Hydrilla* is constantly growing in many areas, but that he does not know what areas Mr. McCord’s estimate of 100 acres of *Hydrilla* were based on. Mr. McCord stated that the 100 acre figure comes from many small areas in the main lake, and that 100 acres is “a baseline” and that in the last couple of years Santee Cooper was unable to define how many acres of *Hydrilla* exist based on anything other than what areas staff have seen the plant. Mr. McCord stated that although Santee Cooper staff has been unable to specifically quantify acreage of *Hydrilla* in the past couple of years, they do know that the plant still exists in the system. Mr. McCord reminded the council that the same discussion was had during the first control effort of *Hydrilla* on the Santee Cooper Lakes, and the decision was made to stop stocking until significant re-growth of *Hydrilla* occurred. Mr. McCord informed the council that after that decision was made, *Hydrilla* growth expanded past the control of the carp, and the council concluded that the decision to continue control stocking until control was obtained and then enter a maintenance stocking mode was the proper course of action for future control. Mr. McCord stated that his presentation will discuss the many factors that attribute to *Hydrilla* biomass aside from grass carp. Mr. McCord stated that while he believes that appealing to lake usage constituents is important, the financial responsibility for aquatic plant management on the Santee Cooper Lakes rests on Santee Cooper alone. Mr. McCord stated that a plan that includes cessation of grass carp stocking with the potential need for large stocking again in the future is not an appropriate plan of action, as the availability of large numbers of grass carp for purchase is uncertain. Mr. McCord stated that the buyers interested in purchasing grass carp in 2012 and 2013 were unable to get the fish due to Santee Cooper purchasing the majority of the Arkansas production. He stated that if the need arises for a large scale stocking on the Santee Cooper Lakes and the demand cannot be met, the entire system will get out of control again. Mr. McCord reiterated that Santee Cooper is held accountable by Federal law for maintaining the system, and that Santee Cooper is responsible for the costs associated with maintaining the system. Mr. Lamprecht stated that “short of significant re-growth (of *Hydrilla*), I do not support stocking.” Mr. Lamprecht stated that he would be in

support of stocking as many as 10,000 fish once population estimates reach a beginning year total of about 40,000. Mr. Perry requested that Mr. Lamprecht return to his conclusion slides. Mr. Perry brought an agreement signed by John Frampton and R.M. Singletary in Feb. 2010, that over the course of five years, an indefinitely until revisited, a goal of 10% native SAV be maintained on the Santee Cooper Lakes. Mr. McCord agreed that the 10% coverage of native SAV was still a goal of Santee Cooper's. Mr. McCord stated that many environmental factors other than carp, such as high water levels and turbidity, have a great effect on native and non-native SAV. Mr. McCord stressed that the 10% native SAV coverage is a goal of management, not a mandate. He stated that native SAV population management is only one consideration in the overall aquatic plant management on the Lakes. Mr. McCord stated that in recent years the Santee Cooper Lakes have been above the 10% level, and that 10% is a minimum goal for native SAV. Mr. Perry stated that although years past have shown above the 10% level, our current level is far below 10%. Mr. Perry stated that the council should consider the low level of native SAV currently accounted for in the Lakes and construct a plan to manage the level back to or above 10%. Mr. McCord agreed that Santee Cooper plans to take measure to increase native SAV levels. Mr. Perry suggested that the council allow Mr. McCord to present his findings. Mr. Page agreed that Mr. McCord should present his findings so that the council could equally weigh both sides and conclude with an informed discussion. Mrs. Eidson addressed Mr. McCord specifically to state the 10% goal is a goal for all agencies included on the Council, and that age class of carp is important for population maintenance, especially considering financial concerns. Mr. McCord began his presentation by stating that aerial surveys of vegetation were not conducted in 2014, however, boat surveys with and without the contractor were conducted. Mr. McCord stated there were no large beds of *Hydrilla*, *Vallisneria*, or other submerged vegetation found. He stated that the system was dominated by floating leaf and emergent vegetation. Mr. McCord reiterated that accurate submersed vegetation surveys were nearly impossible due to conduct in 2014 due to environmental conditions. Mr. McCord told the council, as in years past, if *Hydrilla* re-growth is not suppressed by herbivory or other factors it can rebound. Mr. McCord stated that year end numbers of grass carp in his presentation have the 32% mortality factor applied. Mr. McCord stated Santee Cooper's goal is to reduce yearly stocking numbers until a maintenance population is reached, so that the actual population does not drop below a level at which *Hydrilla* will not be suppressed. Mr. McCord stated that Santee Cooper staff has noted some recovery of *Vallisneria* in areas where it historically existed in late 2014. Mr. McCord discussed *Vallisneria's* mode of dispersion and noted that staff had seen quite a bit of juvenile plants with roots intact floating in the system. Mr. McCord expressed confidence that the *Vallisneria* population will rebound once environmental conditions allow light to penetrate to the beds as it has in years with average flows. Mr. McCord revisited 2013-2014 high lake inflows, turbidity and lake levels. Mr. McCord stated that *Hydrilla* control occurred more rapidly than has been noted in historical data when flow levels were average. Mr. McCord brought his graphical data representations before the board. Mr. McCord began by discussing his figure named Submersed Vegetation vs. Grass Carp. He discussed the plan to continually stock reduced numbers of carp each year in order to lessen the decline of the total number of grass carp. Mr. McCord stated the rebound of submersed vegetation, which included *Hydrilla*, was due to the grass carp population falling below a maintenance level. Mr. McCord stated that previous observations have shown that grass carp will target *Hydrilla* as their main food source when it is actively sprouting, and that a return to average flows should trigger re-growth of

Hydrilla. Mr. McCord reiterated his belief that maintaining years classes of carp is extremely important based on data shown by Phil Kirk that older carp are less efficient feeders. Mr. McCord discussed his table containing Santee Cooper's financial expenditures towards aquatic plant control as they pertained to large stocking years vs. years of reduced stocking. Mr. McCord stated that in years where large stocking efforts were not needed, Santee Cooper was able to reallocate funds towards control of CFH and Hyacinth. Mr. Perry asked Mr. McCord what the approximate cost for *Hydrilla* control on the Santee Cooper Lakes in 2012, 2013, and 2014. Mr. McCord stated that in 2012 and 2013 approximately \$500,000 dollars was spent towards *Hydrilla* control, mostly in the form of purchasing grass carp. Mr. McCord stated that very little was spent in 2014 for *Hydrilla* control. Mr. Perry confirmed Mr. McCord's stated amount calling it maintenance stocking amounts. Mr. McCord returned stating it was control stocking, since they have not reached maintenance levels. Mr. Page interjected that the term he prefers is adaptive stocking and Mr. McCord confirmed. Mr. McCord stated that recommended stocking numbers take into account *Hydrilla* as well as other palatable vegetation, but do not include *Vallisneria*. Mr. McCord stated that Phil Kirk's data has shown that other palatable vegetation must be accounted for, as it impacts the total amount of *Hydrilla* control the carp population can be expected to achieve. Mr. Page stated that the previous council decision was to reduce the recommended number of 25 carp per vegetated acre plus 25 carp per *Hydrilla* acre to a total of 25 carp per *Hydrilla* acre and 10 carp per vegetated acre. Mr. Perry addressed Mr. McCord, concerning the figure of Submersed Vegetation vs. Grass Carp from 2006-2010 the state was in a drought and that could certainly have effected submersed vegetation rebound. Mr. Perry stated, concerning turbidity levels in 2013 and 2014, that he had not been out on the lakes to personally observe but had questioned many people on the lakes about turbidity levels and had been told that many areas of the lakes were very clear. Mr. Perry stated "I wish we had a good index of turbidity, but we don't." Mr. McCord stated that Santee Cooper and DHEC has been collecting turbidity data for thirty years and would be happy to share that data. Mr. McCord confirmed with Mr. Davis that approximately forty water quality stations collect data, including turbidity, from HWY 601 Bridge to the tailrace. Mr. Perry stated "he would love to see the turbidity data compiled." Mr. McCord stated that the data could be compiled. Mr. McCord spoke of the drought from 1999-2002 and 2007-2008. He stated Santee Cooper staff expected a tremendous impact on SAV due to the drought, but that during the 1999-2002 droughts a slight increase in SAV was documented. Mr. McCord stated that a similar phenomenon occurred during the 07-08 droughts, when a balance of new growth in previously deep water slightly exceeded the recession of desiccated SAV. Mr. McCord stated that the drought events benefited native plant populations, but turbidity in recent years has been a large deterrent. Mr. McCord stated that while constant lake levels can benefit plants and fish populations, turbidity greatly reduces light penetration, affecting native SAV at a greater rate than *Hydrilla*. Mr. McCord stated that turbidity had a negative impact on the proliferation of CFH as well. Mr. Perry asked Mr. McCord, concerning the Aquatic Plant Coverage vs. Grass Carp Population, is the goal of 16,000 acres of coverage based on a total acreage of 160,000 acres. Mr. McCord confirmed that 160,000 acres is considered the total surface acreage between the two Santee Cooper Lakes. Mr. Perry pointed out that in 2012 28,412 acres of plant coverage existed, as stated by Mr. McCord's table. Mr. McCord confirmed Mr. Perry's statement, pointing out that "plant coverage" includes submersed, floating, and emergent vegetation. Mrs. Eidson questioned that acreage for each individual lake and Mr. McCord stated that it is approximately 100,000 acres for Lake Marion and 60,000 acres for Lake

Moultrie, based on the current abilities of GIS surveying. Mr. Perry spoke to Mr. McCord pertaining to the agreement of 10% vegetation; the goal is preferred/desirable vegetation. Mr. McCord confirmed Mr. Perry's statement and added that much of the emergent vegetation and some floating leaf vegetation is considered beneficial. Mr. McCord stated that he should include an asterisk to indicate years in which boat surveys were used to quantify vegetation versus years in which aerial photography was used, due to the large difference in accuracy between the methods. Mr. McCord stated that survey numbers for 2014 were an educated guess based on boat surveys and his 30 years of experience. Mr. McCord stated that if numbers of juvenile *Hydrilla* plants was greatly under estimated, then the population could quickly rebound. Mrs. Eidson indicated that she would have to leave the meeting at 1 hr 18min due to a prior scheduled appointment. She stated that she would like the board to address a solution for maintenance stocking in 2015 to maintain a year class of carp while minimizing further depletion of native SAV. Mrs. Eidson asked Mr. Lamprecht what solution he has to offer for maintaining young age classes without depleting native SAV populations. Mr. Lamprecht indicated that he was unsure where the idea that age classes needed to be maintained. Mr. Lamprecht stated that the statement "younger carp eat more per body weight than older" had not been published. He stated that older carp do not rebound from starvation as well as younger fish, and that the current population is dominated by young fish. Mr. Lamprecht indicated that he did not believe the absence of another year class stocking or two would hinder the herbivory. Mr. Lamprecht indicated that he would be in favor of stocking 10,000 carp this year if there was a removal rate as well. Mrs. Eidson indicated that removal of fish would not be cost effective. Mr. Page reminded Mr. Lamprecht that there would be approximately 32,000 fish removed due to natural mortality in 2015. Mr. Lamprecht stated that he would like to get much closer to the 20,000 maintenance level before more stocking occurs. Mr. McCord stated that he would like to get to the 20,000 level as well, but not too quickly. Mr. McCord stated that a zero stock in 2015 would result in a total of 63,000 fish at the beginning of 2016, and if we stock 20,000 fish we will be down to 76,000 total based on mortality rates. Mr. McCord stated that in his opinion we should err on the side of more fish due to the potential negatives. Mr. McCord stated that he did not believe that the population of grass carp was not the main cause of loss of native SAV. Mr. McCord stated that based on literature all of the originally stocked grass carp should be dead, but that is not the case because of the presence of SAV on the Santee Cooper Lakes. Mr. McCord stated that the Santee Cooper Lake system cannot be managed like other lakes in S.C. because it is inherently different. He stated that the S-C system is dynamically much different in terms of flow rates, nutrient loads, average depth, and other parameters. Mr. McCord stated that Phil Kirk's data from 2013 indicated a condition factor 0.93, which would not be considered fit by Mr. Lamprecht's standards. Mr. Lamprecht stated that he believed the 2013 year was the beginning of the crash of *Hydrilla*, so carp condition was not yet indicative of *Hydrilla* biomass. Mr. Lamprecht stated that all SAV is now suppressed, regardless of what caused suppression, so further stocking in 2015 is not necessary to maintain suppression. Mr. Morrison stated that he believes that Mr. Lamprecht's numbers of condition do indicate that the carp have less to eat now than when they were stocked. Mr. Morrison stressed the other water quality factors effects on *Hydrilla* in the S-C Lakes, indicating that if certain water parameters change the carp population may not be able to keep up with *Hydrilla* growth. Mr. McCrary addressed the board to ask what the carp population will eat when the current 100 acres are gone. Mr. McCord answered Mr. McCrary by stating carp will continue to feed on *Hydrilla* as it re-sprouts. He stated that the carp do not pull roots and

tubers up from the bottom and eat them, so as the plants re-sprout from the tuber base, the carp continue to eat it. Mr. McCord also indicated that condition factors have to be favorable for *Hydrilla* to grow rapidly and that carp will eat some native species when *Hydrilla* is not available. Mr. McCord stated that they do not wish to get the population of carp down to the predicted management level of 20,000 fish too quickly, as condition factors may change in the lakes and allow *Hydrilla* growth to exceed carp herbivory. Mr. McCord brought forth his chart of historic *Hydrilla* growth to illustrate the fact that *Hydrilla* grows at an exponential rate when not controlled by carp. Mrs. Eidson addressed Mr. McCord and Mr. Lamprecht to ask why carp age class is important within the discussion of *Hydrilla* control versus within the discussion of a healthy population structure. Mr. Lamprecht stated that age class was important in piedmont reservoir studies due to the fact that some year classes failed. Mr. Lamprecht stated that in the S-C system carp have a higher, less variable survival factor. Mrs. Eidson then asked Mr. Lamprecht why there was no 2014 data. Mr. Lamprecht indicated that the 2014 data was not collected due to a lack of funding. Mr. McCord addressed Mrs. Eidson to state that Phil Kirk's data indicated that year class is important to maintain for the S-C system as well as piedmont systems. He also stated that 2007-2009 year classes are not represented and that the absence of stocking year classes will affect the predictability of the carp population model. Mrs. Eidson addressed Mr. Page to ask if the board would vote on the number of carp to be stocked. Mr. Page informed Mrs. Eidson that the vote today would determine what goes into the draft plan to release for public review. Mrs. Eidson indicated that she must leave the meeting now. Mr. Perry stated that he was prepared to call for a vote, but that he wished to first state that in 2013 the board was clear that an evaluation of stocking success would result in action to continue stocking, cease stocking, or even remove fish from the current population. Mr. Perry moved that no maintenance stocking take place on the S-C lakes in 2015. Mrs. Eidson seconded Mr. Perry's motion. Mrs. Eidson stated that she would like to consider skipping stocking in 2015 based on current conditions. Mrs. Eidson requested that a proxy vote of "yes" be added on her behalf. Mr. Page stated that the original management plan was to continue to stock in order to slow the regression curve. Mr. Perry stated that there is no data to indicate that we are at the point which *Hydrilla* may rebound. Mr. Page stated that the board cannot wait until a rebound is occurring due to the fact that carp stocking takes two to the three years to show effects on plant populations. Mr. Wannamaker asked how difficult the carp are to obtain each year. Mr. McCord stated that obtaining carp can be very difficult and Mr. Page stated that the difficulty varies. Mr. McCord stated that carp availability should not be the driving factor on whether stocking does or does not take place. Mr. McCord stated the council decided in 1999 not to repeat the process of chasing the *Hydrilla* population due to stocking too few carp. Mr. Wannamaker asked if it was more important to manage the native SAV populations or to eliminate the *Hydrilla* population. Mr. McCord stated that both are important, but if *Hydrilla* is not controlled then *Hydrilla* will outcompete all native species for habitat. Mr. Perry stated that his motion was based on the data which the council has available at the present time, rather than the fear of what might occur. Mr. Hutto stated that he was on the council when the first stockings for *Hydrilla* management occurred and that the carp and *Hydrilla* were incorrectly managed in the past. Mr. Hutto stated that he would not necessarily be opposed to not stocking in 2015, but that he was most certainly opposed to stocking zero fish for several years and allowing the possibility for *Hydrilla* to rebound. Mr. Hutto asked Mr. McCord if S-C staff had seen re-growth of *Vallisneria* in areas where it was historically found. Mr. McCord indicated that they had seen juvenile

Vallisneria plants in those areas in 2014. He indicated that many floating sprigs had also been seen in 2014. Mr. McCord stressed that there is much more juvenile vegetation than can be surveyed, but that it cannot be accurately quantified in the juvenile form. Mr. McCord stressed that public opinion cannot be a determining factor affecting vegetation management. Mr. Perry stated that “we all have customers and must pay attention to them.” Mr. McCord agreed that we must pay attention to our customers but that we should not be asking them how to manage vegetation on the lakes. Mr. Perry replied, stating we must listen to what our customers have to say, but we do not have to do exactly what they say. Mr. Perry stated that our job at SCDNR is to make science based recommendations. Mr. Perry finished, stating that we have the opportunity to be conservative in our actions, and based on the information at hand he stands by his previous motion. Mr. Hutto stated that he likes the maintenance stocking approach, with yearly decreases in stocking to meet a more gradual regression curve. Mr. Hutto stated that he did not mind not stocking in 2015, but he would be much less likely to skip stocking in 2016. Mr. Perry stated that he agreed with Mr. Hutto’s statement. Mr. Page invited Mr. Hook to present his carp population succession data, so that council could see an illustrated representation of population regression with different yearly stocking rates. Mr. Hook began his presentation by explaining that a 6400 fish/year stocking rate will eventually be needed in order to maintain a population of 20,000 fish with a 32% mortality rate. Mr. Hook explained that stocking 6400 fish per year will only change the date at which a maintenance population of 20,000 fish is reached by three years. Mr. Perry asked Mr. Hook if the 6,400 represents the maintenance level, and what would happen to the regression if 2015 was not stocked. Mr. Hook explained that the 6,400 fish is the 32% mortality rate of a 20,000 fish population, and that if 2015 were removed there would be very little change in the regression. Mr. Perry asked if that was assuming the 6,400 fish were then stocked in 2016 and so on. Mr. Hook confirmed Mr. Perry’s statement of assumption. Mr. Hook stated that stocking 6,400 carp as opposed to zero carp in 2015 would only move the goal population of 20,000 by one year. Mr. Perry stated that the presentation had nothing to do with the excess herbivory that is indicated by Mr. Lamprecht’s data. Mr. Perry stated that by following a stocking rate of 6400 fish until maintenance level is reached, that we are simply prolonging excess herbivory. Mr. Perry stated he believes that we are trying to reach the point where herbivory is at an appropriate level. Mr. Perry stated that he would like to stock zero carp for at least one but most likely not more than three years. Mr. Perry stated that until a four times increase in *Hydrilla* is surveyed by Mr. McCord, he does not believe that action (in terms of stocking) should be taken. Mr. McCord stated that the council was in the same position before, and that stocking was put off. He said the *Hydrilla* population then exploded and a large number of carp had to be stocked. Mr. McCord stated that he most certainly could not understand opposition to 6,400 hundred fish, when the Lakes total 160,000 acres. Mr. McCord stated that much of Mr. Lamprecht’s data was based on opinion rather than sound scientific data. Mr. McCord stated that Mr. Lamprecht’s data was based on very small sample sizes and that there was no clear methodology for determining the term “excess herbivory.” Mr. Perry stated that out of 20 carp collected in 2014, not one of the fish exhibited a condition factor of over 1.0. Mr. McCord stated that the sample is biased because the fish were collected in one location, using a different method than other years, and there was no classification of age class diversity. Mr. McCord stated that a system wide standard for herbivory cannot be drawn from the limited sample used for Mr. Lamprecht’s data. Mr. Lamprecht addressed Mr. McCord stating that the maintenance level needed for the system is 20,000 fish and there are currently approximately 93,000 fish, therefore there is excess

herbivory. Mr. McCord stated that the numbers simply show an excess number of carp. Mr. Perry stated that an excess number of fish is equal to excess herbivory. Mr. Morrison stated that we cannot assume that the current carp population is solely responsible for the decline in SAV populations. Mr. Morrison stated that eelgrass stands are disturbed yearly, but can only re-grow if there is enough light penetration reaching the submerged substrate. Mr. Lamprecht agreed with Mr. Morrison, and went on to add that once a tipping point between carp population and *Hydrilla* population is reached, there is excess herbivory after. Mr. Lamprecht stated that once there is an insufficient population of *Hydrilla* to support the grass carp population, they will move on to eat less palatable vegetation. Mr. Lamprecht stated that the carp numbers versus the *Hydrilla* numbers alone show that there is excess herbivory, even if the data from his study is discounted. Mr. Hutto requested a field trip onto the Santee Cooper Lakes during the summer of 2015. Mr. McCord stated that he would be happy to take anyone out during any time of the year, especially on vegetation surveys. Mr. McCord stated that his goal is to avoid large scale stocking of 30,000 or more carp, if *Hydrilla* rebounds, and to reach the maintenance level gradually. Mr. Davis stated that almost all areas had been discussed except for funding for the S-C program. He stated that the budget over the past few years had been hard fought. Mr. Davis stated that there is a real possibility of Santee-Cooper not funding the vegetation management program in the future. Mr. Davis stated that the council must consider that fact that there may not be a large amount of funding for S-C in the future when determining management practices. Mr. Page stated that SCDNR had a budget of less than half of S-C's for 2014 for both staff and control measures. Mr. Davis stated that the FERC license renewal process for the S-C lakes was not complete and that they could choose to eliminate the aquatic weed management program altogether. Mr. Page stated that he sees good points on both sides of the discussion, but that he is leery of remaining in an adaptive management plan since it does not address maintenance stocking. Mr. Page stated that in his opinion, based on his 28 years of experience, if S-C waits until the carp population reaches 20,000 fish to perform maintenance stocking that it will be too late. Mr. Wannamaker asked if the funding for the program would be more easily obtained by stocking a small number of carp each year than a large number in one year. Mr. Davis and Mr. Page answered "yes." Mr. Page called for a vote on the motion to stock zero carp in 2015 as moved by Mr. Perry and Seconded by Mrs. Eidson. The vote was split, with Mr. Perry and Mrs. Eidson (proxy) voting "Yes", and Mr. McCord, Mr. Wannamaker, Mr. Hutto, and Mr. Cribb voting "No". The motion did not carry. Mr. Page called for any further discussion on the Santee-Cooper lakes. No discussion was brought before the board. Mr. McCord moved that 6,400 carp be stocked in 2015 into the Santee Cooper Lakes. Mr. Hutto seconded the motion. Mr. Page called for any discussion. Mr. Lamprecht stated that he felt any stocking in 2015 was a waste of money and unfair to the S-C system. Mr. Lamprecht stated that he was fearful of getting the "tool" of grass carp taken due to misuse. Mr. McCord stated that it would be very difficult for any constituent group to take the ability for S-C to stock grass carp, which are scientifically proven to effectively control *Hydrilla*, away from the management group responsible for the S-C system. Mr. McCord stated that the S-C staff is held federally accountable by FERC for management of the system. Mr. Perry stated that he did not believe FERC would hold S-C responsible for misuse of grass carp stocking, and that Mr. Lamprecht was probably speaking to a local level. Mr. Page called for any further discussion. No discussion was brought before the council. The vote was split with Mr. McCord, Mr. Wannamaker, Mr. Hutto, and Mr. Cribb voting "yes" and Mr. Perry voting "no". The motion to include a stocking of 6,400 grass carp in the Santee-Cooper Lakes section of

the 2015 SC Aquatic Plant Management Plan carried. Mr. Page reminded the council that a simple majority is needed to pass draft recommendations, but that a two thirds majority is required to pass the final plan.

Mr. Page called the council's attention to the Lake Greenwood section of the plan. Mr. Page stated that Lake Greenwood had reached the maintenance level of one carp per every ten surface acres. Mr. Page briefly informed the council of the differences between managing carp on piedmont lakes such as Lake Greenwood and Lake Murray, and the reasons for those differences. Mr. Page stated the draft plan calls for 250 fish to be stocked in Lake Greenwood, Lake Monticello: Recreation Lake calls for 30 carp to be stocked in 2015, Lake Murray calls for 1,100 carp to be stocked in 2015, and Lake Prestwood calls for 500 carp in 2015. Mr. McCord asked Mr. Page what size carp the plan calls for stocking in Lake Murray. Mr. Page answered by stating "if needed, all sterile grass carp are to be a minimum of 12 inches in length." Mr. Page stated that Santee Coastal Reserve plans to spend \$100,000 before the end of June and \$100,000 after the beginning of July to treat approximately 2,000 acres of *Phragmites*. Mr. Page stated the treatment acreage for control of water hyacinth on the Black River had been increased due to a significant increase in the population in late 2014. Mr. Page ended his discussion by stating the Naval Weapons Station had decided to treat *Hydrilla* and *Hyacinth* in Foster Creek in 2015. Mr. McCord asked Mr. Page what the Hyacinth level looked like on Black River. Mr. Page responded the *Hyacinth* level did not drastically increase until late October. Mr. Page stated that he does not have new information for Parks, Recreation, and Tourism or State Lakes, but that they will be included for review before the meeting to pass the final plan. Mr. Hook stated that the planned treatment for Hickory Top WMA is missing from the plan as well. Mr. McCord asked Mr. Hook what the Hickory Top treatment plan included. Mr. Hook responded, the plan is to treat Belzer pond for a variety of woody growth to open water access for waterfowl and hunters. Mr. Page called for any further discussion on the plan for 2015. Mr. Perry moved that all reviewed areas apart from Santee Cooper Lakes be approved for the 2015 draft plan. Mr. Cribb seconded the motion. No discussion was brought before the council. The motion carried unanimously.

Mr. Page called for Mr. Hook to briefly relay updates of waterfowl management areas and wood stork rookeries. Mr. Hook stated that ANS have worked with Christy Hand, DNR wading bird biologist, and have noted significant increases in use of rookeries by wood stork nesting pairs. Mr. Hook also commented that managers of the S-C waterfowl management areas reported they all had a wonderfully successful year. The managers credit much of the success to treatment efforts by SCDNR ANS staff and contractors. Mr. Hook briefly discussed measures which were taken to eliminate the 2013 occurrence of *Salvinia Molesta* in Bluffton, SC. Mr. Hook stated that in 2014 SCDNR ANS, The Nature Conservancy, USFWS, and SCDNR wildlife staff joined to discuss, and plan treatment of *Phragmites* in the ACE basin. Mr. Hook called for any questions concerning his updates. Mr. Lamprecht asked about the source of the *Salvinia*. Mr. Hook commented that ANS staff is not absolutely sure of the source, but believe it may be from water gardens in the area as in other past infestations. Mr. Page discussed that ANS has been monitoring treatment and plan to take control if eradication is not seen by summer of 2015. Mr. McCord commented on the importance of eradication of *Salvinia Molesta* due to its aggressive nature and ease of transport.

Mr. Page called for any new business. No new business was brought before the council. Mr. Page thanked Mr. Wannamaker and the SC Department of Agriculture for their hospitality in providing a meeting space for the SCAPMC. Mr. McCord moved that the meeting be adjourned. Mr. Wannamaker seconded the motion. No discussion was had. The motion to adjourn carried at 12:45.