

## 139th Meeting of the South Carolina Aquatic Plant Management Council

### Attendance:

**Council Members:** Julie Holling, Willie Simmons, Chad Altman, Bill Marshall, Casey Moorer, Stacy Scherman, Chris Stout, Adam Leaphart, Tammy Lognion

**Guests:** Ken Rentiers, Emily Cope, Matthew Puckhaber, Levi Kaczka, Bob Perry, Allison Hardin, Jose Calvo, Rick Hoffman, Lee Hendon, & 3 unidentified callers

**Location:** WebEx

**Call to Order:** 10:02 a.m. 3/8/2022

### Minutes:

Ms. Holling called to order the 139<sup>th</sup> meeting of the Aquatic Plant Management Council (Council). Per our lawyers, notice of this meeting has been provided to all persons, organizations and news media which request notification as required by 30-4-80(e) of the South Carolina (SC) Code of Laws. Thank you to everyone for taking time out of your day to participate. We would like to keep everybody muted unless you are speaking. Mr. Puckhaber is my co-host and will also be muting people if they come in and that are not muted. We are recording this meeting. Mr. Puckhaber will be doing a roll call vote as needed for the Council. She introduced herself and called on everyone to introduce themselves.

Ms. Holling moved on to the rest of the agenda. She apologized, but we were unable to get the minutes completed. With just two of us on staff and all the other stuff we need to do, we did not get those completed. They are almost done, but not quite. She will get those to the Council as soon as those are done, for review them while it is still somewhat fresh on your mind. Once we get the minutes for this meeting done, we will send those out, too.

Ms. Holling had two people request to speak during the public comments section. One had to withdraw because of other obligations. Bob Perry is the other person that requested to speak, and she gave him the floor.

Mr. Perry confirmed that everyone could hear him. "Thank you. Good morning, everyone. Thank you for allowing me to give some brief comments on behalf of natural resources, DNR's hunting and fishing constituency, and the general public.

"As you know or most of you know, I spent 12 years serving on Council representing Wildlife and Freshwater Fisheries. I took this very seriously, as you do, immersing myself in data, carefully considering alternatives and casting votes. I took a strong interest in Lakes Marion and Moultrie. There are no other bodies of water in South Carolina that have more importance to hunters and fishermen due to abundant natural resources potential. At times, I voted in favor of motions to release sterile grass carp into these waters to control Hydrilla. I always, however, urged caution, and when it became clear to me that Council was continuing down a flawed path,

I urged more caution and stood for reduced numbers of releases of sterile carp into these systems.

“Today, I continue to urge caution. I ask you to approve no sterile grass carp releases in Lakes Marion and Moultrie in 2022. The data do not support such releases.

“I understand at your last meeting, DNR staff voted against releases of sterile grass carp, but the vote of Council was moved forward with the draft plan calling for a continued maintenance stocking. I applaud the DNR position taken at the last meeting. DNR demonstrated leadership. To those of you from other agencies, I urge you to not fall victim in your thinking and voting to the fear that Hydrilla is going to overwhelm Lakes Marion and Moultrie. This has been debunked long ago. You have the tools and time to keep this from being a threat in the future. These tools do not include maintenance stocking at this time, or they should not. Please allow DNR’s wisdom to guide you. The General Assembly has vested DNR with the responsibility to be the state’s chief natural resource agency. I urge you to follow DNR’s leadership.

“One more brief point. The draft plan states, on page 59, that DNR and Santee Cooper agree that maintenance stocking should be continued. This statement clearly does not align with the vote that I understand you took at your last meeting. I urge you to correct this statement in the final plan to state that Santee Cooper agrees maintenance stocking should be continued. Thank you for your time and service.”

Ms. Holling thanked Mr. Perry for his comments. She asked if there was anybody else on the call that wished to make any comments but did not contact her ahead of time. There were none, and she moved on to the discussion of and response to the public comments made on the 2022 draft Aquatic Plant Management Plan. She pulled those up and shared them. She informed the Council that she was going to read through these for the minutes. She confirmed that they could be seen. We had a total of 12 comments. The majority of those (nine) were positive, two were negative, and one was a neutral comment.

From Mr. Russell Deal: “I urge you to consider two things. First the attempt to ‘manage’ or reduce any native grasses in our lakes by spraying or any other techniques. Second, all stocking of grass carp should be stopped immediately as they are invasive species, and damage our native plants.”

Mr. Carl Cagle said: “The lake is so nice now we support any and all action to keep our lake free of any invasive weeds. Thank you for any support.”

From Mr. Dale Cozart: “My name is Dale Cozart. My wife and I live in the Santee Cooper Resort on the shores of Lake Marion in an area referred to as ‘the cove’. I have resided here for over 20 years and have seen many positive and negative side effects of lakefront living.

“Over the years, the main issue with our waterways has been the constant problems brought about by invasive weeds in our lakes. Seems there has always been some, but the first major problem was Hydrilla. It got so bad a few years back that you couldn't get your boat out of

the boat house, you couldn't swim around your pier or launch a boat at many of the ramps around the lake. Many of our areas were basically unusable, not to mention the issue with power generation and clogging of the turbines at the dam on Lake Moultrie Thankfully, DNR and Santee Cooper bonded together and developed a workable plan to use herbicides and to stock the lakes with sterile Triploid Grass Carp. I was fortunate to be a member of the Goat Island Boat Club and donated funds to purchase the first batch of fish. Almost immediately you began to see improvement and over the years the use of this plan that includes managed stocking of grass carp has proved beneficial. The current stocking levels seem to be working really well to maintain a balance that is workable for all.

“The most recent problems have been Water Hyacinth, Crested Floating Heart and Giant Salvinia. Depending on where you are on the lake, one of these will certainly impact your water usage whether it be fishing or just recreational boating. Living on ‘the cove’ many times these invasive weeds float down the river channel and seem drawn into the cove where they flourish. Thankfully DNR and Santee Cooper are aware of the problem and do their very best to eliminate the problem and keep our waterways clear.

“I am aware that some certain pockets of interest prefer the weeds be left alone to enhance fishing and duck hunting. I'd remind them that the lakes were famous for fishing long before any invasive weeds were present and have always been a haven for duck hunters. Many of these are so called outsiders who travel here purely for entertainment and will continue to do so. Homeowners and local resident tax payers are those who have the most at risk should the weeds be allowed to grow uncontrolled. Over time the lakes will become less and less usable for recreational boaters and home values will plummet. Not good for the local populace.

“I highly recommend the SC Aquatic Plant Management Council approve the proposed plan submitted by SC DNR. Continued controlled spraying of herbicides and a scientific approach to stocking levels of triploid grass carp will keep our lakes in pristine condition for all to use while keeping water quality high and clear for power generation needed by all.

“Thank you for the opportunity to respond.”

Mr. Glenn Stafford said: “Good Day Julie,

“A couple of suggestions for the aquatic plant management program would be:

- a) publish some additional articles in the SCDNR wildlife magazine regarding invasive species.
- b) with the explosive building in South Carolina along with wildlife displacement a study should be started about how wildlife can be managed as they are displaced to curtail the spread of invasive species.
- c) a member of the US Coast Guard should be appointed to the aquatic plant management council regarding ballast water management.

“Hopefully my suggestions will help strengthen the Aquatic plant management program and protect our beautiful state.”

From Dr. Justin Nawrocki of UPL, Ltd.: “I have the privilege of working with many Santee Cooper employees while researching aquatic plant management on Lake Marion and Moultrie during my graduate student years. The employees are knowledgeable about the system, plants and management practices to control both invasive and nuisance plants and algae. They are tasked to not only look after the ecological well-being of the system, for sportsman, but also preserve the anthropocentric interests of producing energy that undoubtedly positively affect significantly more people than the sportsman using the system. The 10,000 grass carp being proposed to help combat the hydrilla growth in the system is a cost effective control measure for an invasive species that has been shown to secondarily kill waterfowl by hosting toxic cyanobacteria (AVN). The desires of a few should not outweigh the need of the many.”

Ms. Debra Gleaton said: “I remember the time that hydrilla almost destroyed Lake Marion and clogged up the turbines at Jefferies Power Station. It was awful. I have lived on the shores of Lake Marion for over 20 years and have been coming to my parents home since 1979. SanteeCooper in partnership with SCDNR has done an outstanding job of finding a balance that supports recreation, fishing and hunting on Lake Marion. I fully support the 2022 plant management plan to control invasive plants and encourage the growth of naive vegetation.

From Mr. CT Horton: I grew up hunting and fishing the Santee Cooper lakes back in the late 70's and 80's. I have many fond memories of being on the lakes with my family. I recently have started taking my boys to the lakes to do the same things as I did once upon a time. What an incredible experience we had. The lakes have changed so much during the last 30 to 40 years which makes sense. Some of my old fishing holes were no longer productive like they once were. It took us some time to find the fish, mainly crappie, but when we did it was incredible fishing. Now my boys will have their own fishing holes and memories from the lakes. There was tons of vegetation in the lake to hold bait fish. The catfishing in the canal was great as well. We caught flatheads and blues mostly. I would like to thank both Santee Cooper and the SC Department of Natural Resources for the job they have done for me and my family to be able to have such great experiences on this natural resource. There is no doubt the lakes have changed but in my opinion they have changed for the better. I support the management plan as written and would like to encourage both organizations to continue to manage the lakes for conservation and preservation.

Ms. Megan Striegel, of RISE, said: “Dear Ms. Holling:

“Thank you for the opportunity to submit comments on South Carolina’s 2022 Aquatic Plant Management Plan. RISE (Responsible Industry for a Sound Environment) ® represents the manufacturers, formulators, distributors, and other industry leaders involved with specialty pesticides and fertilizers. Our members’ products and services are vital to protecting public health and the environment, making safe places to live, work, and play.

“Appropriate control and management of invasive species is important, as invasive aquatic plants can choke out native plants in our natural environment and lead to a loss of biodiversity. Invasive and nuisance aquatic plants can also impede navigation, diminish flood control capabilities, and negatively impact recreational areas.

“The focus of our comments is on the Santee Cooper Lakes’ aquatic plant management plan, and the complete utilization of integrated pest management (IPM) to balance the interest of all lake users by managing the threat of invasive species. We recognize the importance to use all available tools in the effective management of invasive species.

“IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes health and environmental risks. It is site and pest specific, where aquatic managers consider all relevant control tactics and locally available resources. All these methods are an integral part of managing invasive species. Controlling invasive species with only one control method can be less effective and costly, therefore, it’s important for all methods to be available and used when necessary.

“We support the 2022 South Carolina Aquatic Plant Management Plan, and Santee Cooper Lake’s use of IPM to control harmful invasive species in both Lake Marion and Lake Moultrie. Timely and effective aquatic weed management is vital to ecosystem and species health. We respectfully ask the Department to approve the 2022 Aquatic Plant Management Plan as written.”

From Ms. Susan Welch: “I totally agree with the plan as it is written!

“We rely on the experts to know what is best!”

Ms. Rosa Lee Deavers said: “I support the draft proposal for the SC Aquatic Plant Management Plan. We do not need anymore studies to follow to science. They do a great job of proving the case and I support all of their hard work. Please vote in favor of the plan.”

From Mr. Carl Bussells: “For several years, council members have done a wonderful job of providing thoughtful discussion and making science-based decisions. Undoubtedly the issue that has brought the most contention to the table in years past is the stocking rate of grass carp in the Santee Cooper System, and the resulting spikes in hydrilla growth followed by mass stockings have left all parties disappointed. Carp stocking is, and always should be a method that is used very carefully. In time, a reduction in the annual maintenance stocking numbers is certainly an option, but that should be entirely based on the science brought to the table by council members including aquatic plant surveys, grass carp research, tournament results, and data collection, and the council should continue to be cautious of uninformed anecdotes.

“It is understandable to argue that Hydrilla has benefits; it provides a rapidly growing waterfowl forage, harbors a variety of aquatic organisms, and is generally productive for bass fishing - but the benefits absolutely do not outweigh the consequences - especially in the shallow, nutrient-rich waters of the Santee Cooper Lakes. Hydrilla grows and spreads at an exponential rate which inevitably creates monocultures, crowds out native species, impedes navigation, blocks boat ramps, and in the early 90’s, caused one of the largest fish kills in the history of the state by clogging the intake at the St. Stephen Hydro.

“It is important to note that even with the addition of 10,000 grass carp in 2022, the standing population of grass carp in the system is decreasing, and the goal that the council has

strived to achieve is to gracefully and carefully decrease that standing population to find the delicate balance between hydrilla control and allowing the native plants to thrive.

“I can personally attest that the Santee Cooper lake management team wants nothing more for our lakes than a thriving, diverse, productive ecosystem, and we are acutely aware that the cornerstone of an ecosystem is a robust assemblage of native aquatic plants. A kneejerk decision to halt stocking for a year is a slippery slope that will inevitably lead to repeating history with spikes in hydrilla growth and detrimental mass-stocking events.

“I believe the council has worked successfully and in unison for too many years to give in to a non-sequitur, impulsive decision to halt stocking for a year, and I support the plan as written.”

A letter from Chairman Alfred Kelley of Santee Cooper Country states: “The Santee Cooper Counties Promotion Commission supports the continued stocking of triploid grass carp as a best management practice in controlling hydrilla on the Santee Cooper lakes. Biological control is, in our opinion, a much better option than herbicides. It appears from our observation and from comments we receive from fishermen, property owners, and yearly tourists that the maintenance stocking of grass carp has reduced hydrilla and allowed for the return of our native submerged and emergent vegetation.

“The Santee Cooper Counties Promotion Commission was created by the South Carolina General Assembly to ‘improve, enlarge, increase and otherwise enhance recreation and development in the area around the Santee Cooper lakes in the counties of Berkeley, Calhoun, Clarendon, Orangeburg and Sumter. The Santee Cooper lakes were ranked 3<sup>rd</sup> in the nation and 1<sup>st</sup> in the Southeast in 2021 by BASSMASTER. We believe the best way to maintain our lakes and enhance their status as a major tourist attraction and economic engine for our counties is to balance the interest of all the lake users. Managing invasive species is critical to water quality. We highly support the current method of stocking grass carp.”

From Jane Ochsenein (Ms. Holling did not read out the web links included below.): “I would like to submit a public comment opposing the SCDNR Aquatic Invasive Species Management Plan for 2022

“SCDNR is not following their mission and vision statement or core values with their Aquatic Invasive Species Management Plan. From SCDNR- ‘Our vision for South Carolina is an enhanced quality of life for present and future generations through improved understanding, wise use, and safe enjoyment of healthy, diverse, sustainable and accessible natural resources. Our vision for the DNR is to be a trusted and respected leader in natural resources protection and management, by consistently making wise and balanced decisions for the benefit of the state’s natural resources and its people.’

“I, along with many outdoor businesses and recreational users of SC public waterways are being negatively impacted by SCDNR’s Aquatic Invasive Species Management Plan. A cocktail of herbicide chemicals are sprayed during peak water use season. My family business, along with others are forced to close on short notice, cancel tours, refund revenue & stay off the

water for weeks. When businesses do reopen, the environment has seriously degraded, with dead areas and rotting plants. We see wading birds, herons, egrets, and wood storks standing in dying chemical laden vegetation, fishing. We see osprey, eagles, hawks, and endangered swallow-tailed kites eating fish from the river after spraying. We are seeing a drastic decrease in wildlife populations, particularly snakes, turtles, and frogs and birds. Dragonflies and insect numbers decrease noticeably after spraying. The closures from spraying have a much bigger negative impact on recreational users than the limited amount of invasive aquatic vegetation in many places, which does have positive impacts on water quality and provides food & habitat for wildlife. These same recreational users would volunteer for manual removal events to eliminate the need for chemical treatment and related costs in many locations.

“SC state plans are not available on the SCDNR website and there is no link for public comments. The plans are vague in direction and justification, lack clear long-term goals, and focus primarily on toxic chemical spraying treatment methods. Mechanical and manual control methods are never included in annual plans. Very limited if any public notice is given for spray schedule. State law requires areas to be clearly marked for the public to avoid until safe, we’ve never seen a sign at boat landings and had an airboat spray right past us as we loaded kayaks at the landing. Annual wildlife surveys are not being disclosed, impact considerations are minimized. Plans are based on previous year assessments, not current conditions, minimal alterations between flood or drought years, even though conditions have changed radically. These plans are not fully based in independent research, they are guided by an organization of companies that profit off the plan, the SC Aquatic Plant Management Society, creating a lack of trust in these plans, goals and outcomes. Ho is this a wise and balanced outcome?

“Outdated scientific data is being used to show minimal impacts. There is no independent outside evaluation of the plan. Current peer reviewed data shows these chemicals create many problems- The science showing direct negative impacts from bromide and Glyphosate in fish, reptiles, birds, and large mammals like manatees is not a consideration in the plan. All chemicals being used are being found to have negative impacts far beyond initial approval studies being used in the plan. Outdated data is being used to dismiss claims of harm and continue with the same plan, year after year.

“Here are just some of the negative impacts of herbicide spray treatment methods-

“Tens of thousands of lost revenue to small businesses from forced closures for safety. Loss of local tax revenue. Loss of regional tourism. Loss of recreational use for safety closures.

“It damages or kills native plants and wildlife: Although some of the herbicides are designed to be selective towards non-native plant species, when those non-native plants die, their decaying matter often smothers native species and prevents photosynthesis. The decaying plants also release an abundance of nutrients that create an environment much more conducive to non-native species, which have higher nutrient requirements than native species. Kill all wide spectrum herbicides that have severe impacts on native vegetation are being used.

“Aquathol K- according to their own label. ‘This pesticide is toxic to mammals. Treatment of aquatic plants can result in oxygen loss from decomposition of dead plants. This

loss can cause fish suffocation. Water bodies containing very high plant density should be treated in sections to prevent suffocation of fish.’

[https://www3.epa.gov/pesticides/chem\\_search/ppls/070506-00176-20150423.pdf](https://www3.epa.gov/pesticides/chem_search/ppls/070506-00176-20150423.pdf)

“Herbicides fuel toxic algae blooms, which have become so bad that SCDHEC now has an app for reporting & tracking. <https://ohioseagrant.osu.edu/news/2009/fe052/researchers-study-roundup-as-possible-cause-harmful-algal>

“Herbicide Selection Promotes Antibiotic Resistance in Soil Microbiomes-  
<https://academic.oup.com/mbe/article/38/6/2337/6133234>

“Diquat dibromide is causing Vacuolar myelinopathy in a growing number of species. The latest research is showing Bromide as the culprit in Eagle deaths across the southeast and the condition is found in other species. Vacuolar myelinopathy (VM) is a neurological disease characterized by widespread vacuolization in the white matter of the brain. Study summary- ‘Notably, integrated chemical plant management plans to control *H. verticillate* should avoid the use of bromide-containing chemicals (e.g., diquat dibromide). AETX is lipophilic with the potential for bioaccumulation during transfer through food webs, so mammals may also be at risk. Increased monitoring and public awareness should be implemented for *A. hydrillicola* and AETX to protect both wildlife and human health.’ <https://news.uga.edu/international-investigation-discovers-bald-eagles-killer/>, <https://pubmed.ncbi.nlm.nih.gov/33766860/>

“Hydrilla and AVM-affected watersheds in the U.S. southeast include Lake Waccamaw and Lake Murray [https://www.google.com/maps/d/viewer?mid=1Y6yVIj\\_S-z7ziIfzjSmI8YRez8Q&ll=33.55055693992773%2C-75.78906563132708&z=6](https://www.google.com/maps/d/viewer?mid=1Y6yVIj_S-z7ziIfzjSmI8YRez8Q&ll=33.55055693992773%2C-75.78906563132708&z=6)

“Glyphosate was present in 55.8% of the sampled Florida manatees’ plasma. Based on study results, Florida manatees were chronically exposed to glyphosate and AMPA, during and beyond the glyphosate applications to sugarcane, possibly associated with multiple uses of glyphosate-based herbicides for other crops or to control aquatic weeds. We have manatees in our SC waterways being exposed.

<https://www.sciencedirect.com/science/article/pii/S0160412021001185#:~:text=Glyphosate%20was%20present%20in%2055.8,the%20sampled%20Florida%20manatees'%20plasma.&text=This%20chronic%20exposure%20in%20Florida,red%20tide%20or%20cold%20stress>

“2,4-D generally has moderate toxicity to birds and mammals, is slightly toxic to fish and aquatic invertebrates. <https://www.epa.gov/ingredients-used-pesticide-products/24-d>

“Human Health concerns: A major concern due to lack of public notice. The main ingredient in the herbicide that is being used for aquatic plant spraying is glyphosate—a chemical increasingly linked to cancer according to a growing number of studies.

“The impact reaches hundreds of thousands of acres statewide, with aquatic spray hitting soil and transmitted by water, tidal freshwater pushes contaminated plants on land at high tide. Many have a half-life of 2-10 weeks in water, but years in soil. This doesn’t just disappear in a few weeks, it builds up, every year.



“Millions of tax dollars are spent, and thousands of gallons of chemicals are being sprayed on SC waterways to remove a beneficial plant that has been part of the ecosystem for over 100 years. Alternative, more sustainable management methods need developed and implemented. Water hyacinth is proven to remove heavy metals, sewage and contaminants from water. It provides habitat for fish and a variety of macroinvertebrates. It provides food for manatees and wading birds, can be managed manually if done early in the season or over winter before growth restarts. Mechanical for large areas, with collection. There is a growing demand for this plant, textile, paper, fish food, fertilizer, compost or biogas uses are an option if not chemically treated. <https://link.springer.com/article/10.1007/s11356-020-09221-1>, <https://www.ajol.info/index.php/jasem/article/view/57834>

“The clear and proven negative impacts and risks are not included as considerations in this management plan, making it impossible to achieve even the loosely defined goals. While these same chemicals are impacting our environment from agriculture and industrial sources, SCDNR is choosing to add tons more, compounding these issues. The reliance on using the same ineffective methods and plans annually are having severe impacts on our environment, wildlife, and economy. I respectfully ask that this, and future plans follow SCDNR’s mission and core values, taking into consideration the most recent science, use wise and balanced decisions, and consider the sustainability factor. The current plan does not reduce or eliminate the problems caused by invasive plant treatment with tons of toxic chemicals dumped into our waterways by state officials every year.”

Ms. Holling continued with our responses. It does not cover every point, but this is a good overview. Regarding the grass carp stocking objections, all triploid (sterile) grass carp stocked in South Carolina waters, private or public, are required to be tested to ensure they are triploid before being released. This is done to prevent breeding, which has caused problems with other carp species in other states. If the load being tested shows any evidence that all the fish are not triploid, the whole load is either dumped in a pit at the test site or escorted back to the state line by law enforcement.

Maintenance stocking of carp in public lakes which have *Hydrilla*, even if there are low acreage numbers or it is mixed in with native vegetation and not easily observable, is being done to ensure those acreage numbers remain low. The turions and tubers produced by *Hydrilla* can remain dormant for several years and sprout when the conditions are right. *Hydrilla* can produce up to 6000 tubers per square meter. *Hydrilla* can grow rapidly and quickly outcompete the native vegetation. If that occurs, larger stockings of carp are needed to effectively control the *Hydrilla*. Those larger stockings tend to cause problems because the fish start eating native vegetation once they have consumed the *Hydrilla* and it is almost impossible to remove the carp once they are put in a system. By doing smaller maintenance stockings, we can ensure lower numbers of carp in each waterbody to control *Hydrilla* and limit the impact on native vegetation. Carp prefer to eat soft vegetation like *Hydrilla* and *Elodea*. They will seek those types of plants out first before they will eat most of our natives, especially the more fibrous species like water lilies and Eurasian milfoil. There is no evidence of carp eating eelgrass, which is more likely to be eaten by turtles. Carp also do not eat giant salvinia, which is why Santee Cooper (S-C) wants to

introduce salvinia weevils. These weevils will only eat the *Salvinia* and are unlikely to overwinter.

The 10,000 triploid grass carp scheduled to be stocked into the S-C Lakes this year are below the mortality rate for that system. The overall number of grass carp there continues to decline. This is a continuation of the Council decision six years ago to stock 10,000 carp per year to reduce the total number of carp in the system while having yearly age classes of fish to take the place of some of the fish that die each year. Having multiple ages classes in the system takes advantage of the higher feeding rate of the younger fish, which can also get into shallow water to consume newly sprouted *Hydrilla*. This will allow the population to be diverse in age while slowly reducing the total numbers. The goal is to have multiple age classes in the system with an overall coverage of 1 triploid carp for every 5-6 surface acres. At that point, we can make small adjustments to the annual mortality stocking rate to account for any changes in the *Hydrilla* population, which is being seen mixed in with native plants across the system. This decision was more favorable than introducing hundreds of thousands of triploid carp into the system periodically as a reaction to increasing numbers of hydrilla. Large stands of *Hydrilla* continue to be treated with selective herbicides in Lake Marion, Lake Moultrie and other lakes as needed.

Ms. Holling discussed the objection to treating natives. Native species are only treated in limited instances where water access or navigation is impeded, or water intakes are blocked. This occurs occasional statewide. S-C treated 164 acres of vegetation in residential areas last year, but that number included two invasive species. In contrast, their hyperspectral imagery survey indicated there are 22,754 acres (14.27% coverage) of native species on their lakes, providing food and cover for fish and waterfowl. This does not account for any vegetation that was under tree cover.

One exception to this is in areas where cutgrass (aka white marsh) has taken over an area and created a monoculture which is unusable by most animals because it is extremely thick and is not a food source. In these cases, openings are created in those areas to allow other native vegetation to move back in and create a diverse habitat that will support fish and wildlife, as well as to allow access for hunters and fishermen. This type of action has been supported by the SC Waterfowl Association, SC Department of Natural Resources (DNR), S-C and SC Chapter of Ducks Unlimited. All partners listed contributed monetarily for the Super Flats Restoration work.

Our goal is to control the invasive species and let the natives continue to grow and expand, unless they fall in the limited instances listed above. To get to this goal, an integrated management plan that includes herbicides, and biological control is needed. We do not change this goal based on how rich or influential a requestor is. We follow science in making our decisions. S-C and DNR have worked to expand the natives by doing plantings of native species in areas that could support it. S-C has done that the past 4 years with eelgrass, smartweed and water shield. S-C has supported waterfowl management projects on the Santee National Wildlife Refuge for many years though aerial work, donation of equipment (airboat, pumps, etc.) in addition to waterfowl based projects on Lakes Marion and Moultrie for public access, including the 2022 Super Flats Restoration Project, the 2016 DNR Joint Cutgrass Aerial on Marion and Moultrie, the 2019 Val and Watershield Project, the 2020 Borrow Pit Project, the 2021 Watershield and Smartweed Project, and the 2021 Wood Duck Box Project. In 2022, we are

planning to continue Super Flats Restoration Project, as well as start a Sparkleberry Pine Creek Project (targeting cutgrass to improve open water for waterfowl) if budget allows.

Ms. Holling addressed the concerns about herbicides. Aquatic herbicides are safer, and far less toxic than terrestrial herbicides. There are no aquatic herbicides which are classified as restricted use, as there are with terrestrial herbicides. When used properly and according to the labels, including those that are copper based, they are safe and effective. All aquatic herbicides undergo extensive research before the EPA approves them due to the sensitivity of fish and invertebrates. All herbicides are routinely reviewed by the EPA. Extensive research for health and safety to humans, animals and environment are considered before an herbicide is approved for use. Herbicide product labels are reviewed by EPA and each state's regulatory agency (Clemson University's Department of Pesticide Regulation in SC) routinely to ensure that the product labeling is correct and up to date.

There have been some claims of aquatic herbicides causing cancer, but those claims have been scientifically disproven. The newer formulations of herbicides introduced to the market in the last 10 years are even more environmentally friendly. The product ProcellaCOR SC was formulated to California registration standards, is specific to crested floating heart and *Hydrilla*, and can be utilized to specifically control those invasives without affecting many natives. ProcellaCOR is being used more often than diquat on *Hydrilla*.

Aquathol K, 2,4-D, and glyphosate were mentioned specifically in one person's comments. The first two are rarely used by DNR. Glyphosate is generally only used in the control of phragmites.

For the treatments of water hyacinth on the Waccamaw River, we use triclopyr and flumioxazin, as this does not affect the spatterdock that also grows there. We spray the herbicide on the foliage of the water hyacinth, trying to ensure that is the only thing we are spraying. There are no use restrictions after using these herbicides.

Ms. Holling paused to check for questions before discussing mechanical and manual control concerns. We generally do not use mechanical control because it is slow, expensive, and not selective. It tends to have lots of bycatch, including invertebrates and small fish, which is detrimental to the larger fish, as well as birds and turtles. Mechanical control methods break up vegetation and do not collect all the pieces, which can lead to the spread of the species they are trying to control. It must also be repeated on a regular basis.

Manual control is also slow and expensive, even if volunteers assist in the effort. Neither method is effective for large infestations, as the growth rate of most of these species is faster than they can be collected.

Ms. Holling addressed the opinion that herbicides fuel toxic algae blooms. There are more harmful algae blooms (HABs) in recent years. There is no proof that herbicides are the cause. The article referred to is about a study being done in Lake Erie, which talks about agricultural glyphosate and phosphorous runoff. No conclusions have been made in that study yet. In SC, there has been an increase in the number of homes, especially around lakes and

rivers, and many people fertilize their lawns well beyond what is recommended on the labels. Much of this excess fertilizer ends up in our lakes and rivers, which can cause problems.

The treatment of invasive vegetation does add to the nutrient load, but when done regularly to control the smaller amounts of vegetation, it is not significant enough to degrade the environment.

Ms. Holling discussed the concern about no public notice being given. Public notice is required if there are any restrictions to drinking, irrigation, swimming, or fishing. The herbicides being used most of the time do not have any of those restrictions. Notice has been given to some recreational businesses as a courtesy, so they may adjust their schedules if they wish to. Unfortunately, scheduling the contractors is sometimes on short notice.

We instruct our contractors to avoid contact with anyone who is paddling or fishing along the edges of the areas we are treating, but we also try to get ahead of those contractors and ask those individuals to move so the contractors can do their work.

Ms. Holling address the point that dead vegetation is unsightly. It can be. It can also be used to educate people on the hazards of invasive vegetation, which can make creeks, back waters, and shallow waters impassible. If left unchecked for too long, floating vegetation can cause navigation issues in the main river channels as well.

Ms. Holling addressed the complaint that treatments are done during peak water use season. Herbicide treatments are most effective while the plants are actively growing, which is also peak water use season. That is unavoidable.

Ms. Holling discussed the plan availability and comments. Each year the draft plan is available for public comment for at least 30 days on DNR's website. Once the annual plan is finalized and approved, it is added to DNR's website as a final plan.

Ms. Holling addressed the concern that the plan is vague in direction and goals and focused on herbicides. The plan notes the vegetation that has been observed in each waterbody as well as options for controlling the vegetation. Since the growth patterns, species types and numbers vary by year based on environmental conditions, we try to allow for as many options as possible to control the vegetation without having to come back to the Council in the middle of the year to get approval to make adjustments which may be time sensitive.

Herbicides are the focus if biological controls are unavailable and maintenance measures like drawdowns are not possible. As stated earlier, mechanical means of control are not cost effective and must be repeated regularly.

Ms. Holling discussed the last few things on the list. There was a request to publish additional articles about invasives In the Wildlife magazine. We will work on that. Someone else requested a study wildlife displacement and how it can be managed to curtail the spread of invasives. This can be discussed with the Wildlife section, but there is probably limited spread of invasives by wildlife. Someone suggested that a member the US Coast Guard should be

appointed to the council in relation to ballast water management. The Coast Guard already regulates ballast water. This plan only deals with freshwater invasive plants.

Ms. Holling said those are all the comments that we received during the comment period. She did have one more comment and some discussion that she received last week and has included as a courtesy. SC Representative Phillip Lowe sent me a message from his personal email address, saying “Stop dumping grass carp in the S-C system for this coming year. Wildlife needs deserve a balanced approach.”

Ms. Holling responded to him. “Thank you for your comment. I will make sure the Aquatic Plant Management Council is aware of it. The Council has reviewed a lot of data about the Santee Cooper lake system over the years regarding carp, invasive aquatic plants (especially hydrilla), and the resurgence of the native aquatic plants, which is up to 14.27% coverage in the system (almost 23,000 acres). Based on that information, they have chosen a path of slowly reducing the carp numbers while keeping an eye on hydrilla, which is still mixed in with the native species and has the potential to overtake the native species again under the right conditions.

“The Santee Cooper staff is working hard to control the invasives while allowing the natives to flourish and provide habitat and food for fish and wildlife, as well as providing recreational opportunities for the citizens of the state and visitors. I urge you to talk with them about the data they are collecting and what they are doing to ensure balance in the system.

“The Fisheries staff at DNR is working to study the carp in the Santee Cooper system to ensure they are healthy, while also trying to determine if the mortality rates and health indices need to be adjusted. They also continue to study the health of the game fish in the system to ensure those populations are sustainable. I would recommend that you talk with them also about the data they are collecting and how it can affect the decisions made by the Council.

“I assure you that the Council is very concerned about making the Santee Cooper system an area that can produce an abundance of fish and wildlife while also providing recreational opportunities for people.”

Rep. Lowe responded, “Thanks for the email. I disagree. Santee Cooper has dominated the vote has been managed for hydro. DNR has not visibly fought for a balance of hydro and wildlife. That is a shame. That is your role.”

Ms. Holling said Rep. Lowe asked for an updated list of Council members, because the information on the website was not up to date. It was missing two people. He also asked for clarification on who was representing S-C. Ms. Holling provided Ms. Moorer’s name. She also asked, “What do you think the Santee Cooper lakes should look like? What kind of balance would you like to see? I’m willing to share your thoughts about it with the Council, although I can’t guarantee that they will agree with you.”

Rep. Lowe responded, “Balance means wildlife gets equal consideration with hydro. It means managing for quality vegetation that is beneficial to fish and migratory waterfowl. That

requires selective spraying to manage for native aquatics. Carp have food preferences but the overstocking results in damage to beneficial plant species.

“We have proven we can control hydrilla with carp. Balance is established by allowing a return of native species while managing against non-native. I realize it is more costly to spray. The cost on wildlife is another factor that is not being considered. Just because shallow waters have plant growth does not mean it is beneficial to wildlife.

“What balance looks like is an abundance of fish and waterfowl while also producing hydro-electricity.”

Ms. Holling asked if anyone had any additional comments in response to the public comments before she moved onto the next item on the agenda. Ms. Moorer said she had a correction and a couple comments. On your response, in section 2, in the 4<sup>th</sup> paragraph, you talked about the 2022 Super Flats Project. It should be 2021. That work happened in 2021. It was a partnership with the South Carolina chapter of Ducks Unlimited and DNR and is going to continue in 2022. She wanted to make that clarification. She really appreciated all the public comments and the additional comments that we have had here during the meeting. She wanted to address the Council and let everyone know to not be led to believe that the agencies represented on this Council are at odds, because we are not. However, we are sensitive to the outside pressures that can be placed upon the different agencies on this Council. We do work together. We have common goals, and we will continue to lean on one another as we manage the S-C lakes. We value the opinions of the biologists at DNR. We respect their opinions, and we move together unified. She wanted to remind everyone that we do have that unification and that we are on the same page with common goals, but the world that we operate in sometimes has different influences on us.

Ms. Moorer addressed Rep. Lowe's comments. In that last part, he had a lot of great points. He said that large stockings are a detriment to our native species. She agreed that it is. That is why we are asking for a 10,000-grass carp stocking in a 170,000-acre reservoir system. We can go back and look at the historical data where we have stopped stocking and then in the years following had over 200,000 grass carp socked in the system. That was a detriment to our native species. He had a great point that is very true. That is what we are trying to avoid. Regarding the comment that we have dominated the vote, she reminded folks that we have one seat on this council, so we have one vote. We do not manage this for hydro. We have done a waterfowl-based project every year for the past five years and worked for the past 20 years on the refuge. She reminded everyone that S-C is solely financially responsible for the work that happens on these lakes.

Ms. Moorer agreed with Mr. Perry's statement that we have several tools in our toolbox. We have some great selective herbicides out there that we use to combat *Hydrilla*. The cost associated with this are high. We looked ahead and run some quick numbers. At the peak of *Hydrilla* on the S-C system, we had 40,000 acres. We had tried to battle that for years with herbicides, spending millions of dollars back in the 90s. We ran the math on ProcellaCOR, which is the newest herbicide on the market that is selective, could be used to combat *Hydrilla* and not harm our natives. The math on that is \$78 million in product alone. S-C bears that burden. That

means our ratepayers hold that burden, not tax funding, but S-C ratepayers. That ultimately impacts everyone in the state of South Carolina. She does not think herbicides are a silver bullet. She does not believe that grass carp are a silver bullet. Integrated pest management, which is what we try to do, is the best strategy. Over the past five years, we have been doing that. We have not been doing large stockings, but consistent stockings. Those age classes Ms. Holling mentioned are important. She knows the Council has been moving in the right direction from what we see daily. We have reached out to Rep. Lowe and asked him to come talk to us about our managed strategies, go out on the system with us to look at what we see every day and what we are up against every day. That offer has been declined at this time. We are hopeful that we will be able to get him out sometime this year to talk about the goals of S-C, where our management program is going, and our partnership with DNR and everyone else on this Council. She thought she hit all her notes, but if something else comes to mind, she would speak up. She thanked everyone.

Mr. Simmons made a comment from DNR's standpoint. DNR has always been concerned about the wildlife species statewide. When you look at the Lake Marion and Lake Moultrie, we are concerned there as well. We are concerned about the wildlife species. We are concerned about the native aquatic plants. We are concerned about the effect that invasive species are having on our populations that are here. We want to approach this in a very balanced and effective way. Every year, this Council gets together and looks at the numbers. We do what we can to look at this and take it in a very good, educated direction as far as how we are going to move forward. That is something that we always look at and we take that very seriously. We are trying to provide excellent opportunity for those users that are throughout the state of SC, while also protecting the resources that we have here, especially native species. For people who seem to be saying we are not moving in a direction that includes the best tools that we have in our box, we are trying to use everything we can to make the best decisions possible.

Ms. Holling thanked Ms. Moorer and Mr. Simmons. She asked if there was anybody else on the Council that wished to make a comment. Mr. Marshall had a couple of thoughts. At the last meeting when the proposal of no stocking was being discussed, it was countered by the perspective that was presented in some of the notes Ms. Holling provided in her response today. That perspective was that an even hand of maintenance stocking is a preferred approach rather than stopping and starting and having those swings that we have had in past. We want to take an evenhanded approach of keeping a maintenance stocking. What he would offer is that he thought when we got to the 10,000 fish stocking per year level, he thought that was a compromise position. There were thoughts of doing higher stocking levels and lower stocking levels, and the 10,000 level was arrived at based on sort of a compromise. He would just encourage us all to think about how we can potentially, in a wise, appropriate management approach, find a reduced level, as appropriate. He thought Ms. Holling mentioned we were looking to target of one fish per five or six acres. He thought we have projected in the past that to achieve that, we could potentially stock anywhere from 22,000 fish to maybe 35,000 fish. That would be the targeted population level over a number of years. His consideration is that we think about how we might step down the stocking to achieve a level that meets the long-term goals. He inquired about what our long-term goals were last time and he does not remember exactly what Ms. Moorer's responses were, but he thought obtaining a population level that gets us at one fish for five or six acres is what we want. In terms of our own credibility about what we are stocking for, he knew

the surface acreage of the S-C lake system is 160,000-170,000 acres, but the open water habitat is something less than that. He would encourage us to give a credible acreage figure for the open water habitat, not the forested wetlands, but the open water habitats and stock to one fish per six or five acres based on the open water habitats which are managed with grass carp. That might get us to a reduced level from 10,000. He was not sure what that works out to, be it could be 8000 fish. He wanted to put that out there for consideration as we seek to balance the various interests, and also to be credible about stocking according to our goals.

Ms. Lognion spoke up but turned her video off to ensure she could be heard well. She was listening to her fellow Council members and the comments each of you had are very valid comments. She appreciates you and the fact we work as a team. She thought the public maybe does not realize how hard we try to come to compromise that works based on what Ms. Moorer was saying. From a pesticide regulation and regulatory agency view, integrated management is the way we like to go. She felt there is just no other way because you have a balance, and we need that balance. We do not want to use a lot of herbicides. As you saw from the comments, the public really gets upset with herbicide usage. We are very careful in that we recommend lowest rates possible. The grass carp really play huge factor because it is an integrated pest management tool. Like Mr. Simmons was saying, we want to use every tool in that box. That is what she is hoping we can continue to do. If we look at what Mr. Marshall was saying, she reminded everyone that the DNR data that we looked at we are losing carp because of mortality rates. If we look at the proposed stocking rate, we are still not matching mortality rate. We really need to look hard at that as well, if we are thinking about reducing the number. At this point, we have an older part of the population, and we are losing those carp. The older carp are not doing the job. They are going to die out. They are not eating at high levels as far as control. They are eating at maintenance levels to control their body weight. These are some things we need to look at. We need to use every tool we have in the arsenal, like Mr. Simmons was saying. We need to look at the mortality rates versus the stocking rate to make sure we stay at a competitive rate. We do not want to fall behind, where we have a very old carp population that is not controlling vegetation at the levels we need. Then we are in a pickle. We see our invasive numbers popping up and we are having problems. If that happens, we have to come up with a heavy hit of herbicide, which is not what the public wants to see. No one wants to see dead foliage out there. From public standpoint, the outcry comes across. We get calls and complaints, as do you. We really want to make sure we try to keep a balance there. She wanted to kind of pull everybody's thoughts together, let you know she appreciated each one of you, and she was glad we work as a team together.

Ms. Holling thanked Mr. Marshall and Ms. Lognion and asked if any other Council members had any comments. Ms. Moorer addressed Mr. Marshall's comment about not being sure or clear on the target at the last meeting. She offered to share the graph that we always look at. She does not know that magic number. We have talked through it with our staff and with DNR staff about what is that magic number. We want to get where we are at true maintenance stocking, because right now we are not at true maintenance stocking. We are in adaptive management. True maintenance stocking would be replacing mortality. Like Ms. Lognion said, we are not replacing mortality yet. We looked at a tiered approach when we were coming up with the recommendation this year.



Ms. Moorer shared her screen to show the graph of the *Hydrilla* and grass carp numbers over the years. She noted that when we got down around 12- to 20-thousand fish, we were losing control. The exponential growth of *Hydrilla* makes it a challenge. Once we are behind the 8-ball, we all know it is hard catching up. We fought it with 200,000 fish and then we had a crash. We do not want to repeat this history. That is what we are trying to avoid. For this year, 2022, before stocking, we are starting with our standing population of 24,000 fish. Once we stock, at the end of the year it would be 34,000 with a stocking of 10,000 fish, if we do 10,000. She is with you on acreage. We often say 170,000 acres. That all depends on the elevations. If we are in a drought or flood determines how much is true open water. When we do our survey assessments, what can be surveyed is 159,500. We can go with the 160,000. We try to be consistent when we are looking at percentages. Using 160,000 acres divided by five, that puts us at 32,000 fish as a standing stock, if we go with the one fish for 5 acres. If we go back to the graph, she wanted to talk about these two lines at the end. We want them to be together, but we always want to make sure we give ourselves a buffer. If we have extreme environmental conditions like we had in 2007 with a drought, we do not want to see *Hydrilla* take off. Then we would be behind that curve, and we cannot catch back up. She cautioned everybody to think about giving ourselves that buffer of protection for environmental impacts. It can go both ways. She pointed to 2015, when we had the historic flood, followed by Hurricane Matthew, Hurricane Irma, and Hurricane Florence. She believed that this section is one of the reasons that we got control of crested floating heart. It helped both with herbicide and then water quality. We had high inflows and high turbidity. That alone can impact our native vegetation, so trying to strike that balance between what we are going to have stock wise in the system is difficult. She cannot give you an exact number, but her gut tells her that somewhere between 30 and 40,000 fish as a standing stock is where we should be to give ourselves that buffer for environmental ups and downs. She would lean on Mr. Kaczka and other fishery biologists on staff with S-C to talk through the age class and the importance of that, like Ms. Lognion mentioned. From an aquatic plant standpoint, that is her opinion. We must make sure that we are keeping in the back of our mind that the environmental impacts have a great effect on vegetation growth, both from an invasive standpoint and a native standpoint. She asked if there were any questions on this and offered to email this spreadsheet to the Council. She noted this was a spreadsheet that Mr. Page kept. S-C used to keep a spreadsheet. A few years back she and Mr. Page decided to stick with one spreadsheet. She is happy to send this to the Council if you want to look at it closer. We have added some comments from S-C, including various events. You will see where we stopped stocking and that was due to some pressure on the Council.

Mr. Marshall asked that she share it with him. He was looking at what he thinks is a graph of that chart. It shows projections of stocking and how the population would decline based on mortality and stocking. Ms. Moorer stopped sharing and said she would send it to the Council in an email right now. Ms. Holling thanked Ms. Moorer. Ms. Holling said she was not sure but thinks the thing Mr. Marshall was looking at is something Mr. Page created around the time that we were discussing how many carp we should stock on a 5-year basis. One of the things on that was an indication of a low number of 20,000 carp, which is the one to eight ratio and is not sufficient to keep the *Hydrilla* in check. Ms. Moorer asked Ms. Holling if she knew the rate DNR was stocking Lake Murray and Thurmond and what was the ratio there. She knew those systems cannot be compared. It is hard to compare the S-C system because the lakes are so shallow, with an average depth of 12 to 15 feet. She knew we cannot really compare apples to apples with

Murray or even the management goals for Murray or Thurmond, but it might be worth thinking through. Ms. Holling took a moment to pull up that information. Ms. Holling said we were looking at a 1 to 8 ratio for both Lake Murray and Greenwood. She asked if there were any other questions or comments regarding the public comments.

Ms. Holling moved on to discussion of and changes to the 2022 Draft Aquatic Plant Management Plan for final approval. One minor correction was Mr. Altman's section is no longer Environmental Quality Control. It is Environmental Affairs, so it is just that minor change in the plan for his information. She asked if we have any other things that anyone feels needs to be changed or corrected. She asked if we had any motions from the Council. Ms. Moorer made a motion to approve the plan as written. Ms. Lognion seconded the motion. Ms. Holling asked if we had any other discussion regarding the plan. Mr. Simmons say that after going back, looking at the data, and talking with staff, we would agree with it as is. Ms. Holling thanked Mr. Simmons and asked for any other comments from the Council or other discussion. There being no other discussion, we will call that to vote. She asked Mr. Puckhaber to do a roll call vote. After confirming that he could be heard, Mr. Puckhaber did a roll call vote. The motion passed with 8 ayes and one abstention.

Ms. Holling asked if anybody on the Council had any unfinished business. There being none, she moved on to new business. She noted that she had a request of Ms. Cope for the next meeting in the fall to have our waterfowl biologist make a presentation to the Council. Ms. Cope said she could do that. Ms. Holling thanked her. Ms. Holling noted that we do plan on meeting in person again in the fall. Ms. Moorer has agreed to host a field trip on the S-C lakes after the meeting, so all of us can get an even better idea of what is going on there. Ms. Holling asked if anybody had any other new business. There was none and she asked for a motion to adjourn. Ms. Moorer made a motion to adjourn. Ms. Scherman seconded the motion. Ms. Holling called for a vote and the motion passed unanimously. She told everyone to have a good day and thanked them for participating before adjourning the meeting.