Report on David Crosby's Visit to Orchid Lake on October 21, 2021

Introduction

Dr. David Crosby, Virginia Extension Agent, visited Orchid Lake as requested to provide insights into the maintenance of the Lake, its water, and its vegetation. Attending this visit were: Rich Lehr, Chris DeMaioribus, Corinne de Jesus, Melanie Oslin, Rick Cromwell, and Prentiss de Jesus. Kathie Cavendish marked her presence initially but did not stay for the visit. Hope Goza did not participate in the walk but was present for the summary by Dr. Crosby at the end of the visit. Prior to the visit, samples of mud were taken from the lake bottom, which will be sent to a soil laboratory for analysis.

Field Visit

The members present for the walk introduced themselves and shared the reason for their interest in the lake's environment and welfare. Dr. Crosby understood from their comments that there was concern with the unsightly growth of the grasses around the lake and the general health of the lake and its environment.

Dr. Crosby was shown the dam overspill and overflow system. He stated that the overspill was not low enough. We acknowledged that we had already been told that eventually we might have to modify the dam's height. In addition, he stressed that the grass growing on the dam needed to be cut. We informed him we normally cut the grass in the winter when its drier, which he agreed was a good time to do so.

Finally, the group visited the Blue, Yellow and Pavilion Beaches. Following the walk, the group met at the Pavilion for Dr. Crosby's observations.

Recommendations for Eradication of Invasives

Dr. Crosby indicated that a certain amount of grass is good for a healthy pond but understood that the members were concerned with the rapidity of growth. He identified two types of grasses, "pond weed," the flat pods floating near the grass (i.e., lily pods) and "Spike rush" the thin grass in the lake, both of which are considered invasives. He said that if we have Watershield grass it could be a problem if allowed to spread, and we may have a weed called Carolina redroot. He made the following suggestions for dealing with the invasives:

1. Eradicate the grasses using a chemical called *Rodeo*. It is a chemical much like *RoundUp* and can be purchased in the marketplace. Before applying, however, a surfactant like *Cide-kick* should be added. One must use precise amounts of the two chemicals. The mixture is then sprayed on the surface of the grass (not on the water). This should be done in early spring when the lake water temperature is 60-65 degrees. The grass will show signs of dying in a few weeks.
2. Another way to treat the invasive grass is to let it freeze in winter. This would entail draining the level of the lake, so the grass is out of the water and letting the freezing temperatures kill it. This option was not considered feasible for OLE.
3. Dr. Crosby also suggested trying to eradicate the grass in spots to see how effective our efforts are. Hiding the grass from the sun by covering it would starve the grass, and it would die. Landscaping tarp covered with sand would be another good way to spot treat. We could do this in places around the lake to enable fishing from shore.

4. To treat pond weeds, such as Watershield or Carolina redroot, Dr. Crosby suggested spraying a chemical called *2,4-D* (Dichlorophenoxyacetic acid).
5. Dr. Crosby advised us to use a backhoe to pull up unwanted weeds along the shoreline.
6. Additionally, Dr. Crosby suggested the introduction of Grass Carp. This is a fish that thrives on plants and could possibly help in controlling the grasses/invasives, such as Hydrilla. We would need permit from the Department of Wildlife Resources to introduce carp into our lake and would purchase the fish from listed vendors. *(Rich Lehr indicated he would pay for the permit.)* For a lake the size of Orchid Lake, we should introduce 10 carp per acre, which would mean approximately 100 carp at a cost of approximately $1650.00. It is important to note that the carp will not reproduce, since all carp sold in Virginia are sterilized. They should not be smaller than 8-10 inches since anything smaller would be food for the bass. After about 3-4 years, the carp should be replaced with another batch. Carp is edible.

Recommendation Regarding Fish in the Lake

Dr. Crosby reiterated what he mentioned previously on management of fish life in the Lake:

1. Crappie should be fished out completely.
2. Spawning areas can be enhanced by laying pea gravel.
3. The remaining fish can be fed if we want to see faster growth.
4. We should concentrate on preserving Bluegill, Bream and large-mouth Bass.
5. Introduce Grass carp to control aquatic weeds such as Hydrilla.

Other Recommendations

1. Spillway should be lowered.
2. To be in compliance with a lake that permits swimming, we should have a throw rope and safety buoys on all beaches and piers.
3. A semi-circular buoyed area should be delineated as a safe swimming area at the Yellow Beach.
4. Only one swimming beach with sand is needed for a community our size. It would be wasteful to add sand to the other beaches.
5. The dam should undergo inspection every year for cracks, seepage, and other signs of dam failure.

Test performed by David Crosby

Dr. Crosby used his analytical kit to test OLE lake water. The results are as follows:

pH	7.5
Alkalinity	17-34
Hardness	17-34

He indicated the results were good for our lake, and that most likely after the mud analysis, we would need to add some lime.

Next Steps

1. The mud samples will be sent to the VA Tech soil laboratory in Blacksburg, VA. After the analysis is completed and shared with Dr. Crosby, he will provide recommendations for additional measures we may need to take. We may need to have this done every 3-4 years.
2. If we need to add lime, it should be added in October/early November to give the lime a chance to bond with lake matter and settle to the bottom.
3. Continue to monitor the pH and alkalinity.
4. Decide on our priorities for the lake and set an agenda to accomplish our goals.

Effects of Chemical Solutions – Additional Thoughts by Prentiss de Jesus

As head of the Environmental Committee, I would like to express some personal views on the options offered to us for curbing the invasive grasses. Considering the above-mentioned recommendations, I firmly believe we should proceed with great caution. More research should be carried out on the aftereffects of using spray chemicals and their long-term benefits. Our experience with beekeeping has shown that sprayed chemicals kill not only plants but insects as well. By spraying the invasives, we will also end up killing beneficials and living creatures like dragonflies, bees, butterflies, frogs, and even turtles. This is contrary to the essence of an environmental approach to improve the health of Orchid Lake. Moreover, it will entail on-going costs. As David Crosby expressed in no uncertain terms (and perhaps as a warning): "Chemicals are expensive."

A physical (i.e., non-chemical) solution is more desirable not only with regard to cost but also in keeping with responsible environmental practices. Dr. Crosby's suggestions were dramatic because they provided a solution for eradicating invasives, which is what he thought we wanted. He did point out that grasses can be beneficial to ponds and lakes by providing habitats and safety for young fish. He also pointed out that the control of grasses will be an ongoing struggle and that perhaps the best strategy is containment. His suggestion for containment included blocking off the areas that we want kept free of grasses – the beaches and reserved fishing areas on the banks. This could be done with regular maintenance and by using landscaping tarps to cover and eradicate the grass. We can still introduce Grass carp as a natural solution, which to everyone's benefit may offer positive results. Before jumping to an expensive and possibly destructive chemical approach, we should try all other options.

I am willing to delve into the scientific literature to explore the pros and cons of using chemicals in a water environment and will endeavor to present both sides of the issue. I will present these findings to the membership of OLE for consideration and discussion. Once we have all the information, we will be in a position to follow our conscience and opt for a solution with greater conviction.