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Last week a news segment was aired that discussed a potential link between spraying invasive plants on Lake Okeechobee and the harmful algae blooms that have occurred this year. I would like to take this opportunity to share a different perspective on this issue.

The news report was exactly correct when it stated that algae blooms are often the result of excess nutrients in the water, particularly phosphorus. When these nutrients reach high levels and other conditions exist, a bloom can and often will occur. Also correct is that all manner of aquatic plants absorb these nutrients when they grow, making the nutrients unavailable for the algae. Moreover, when plants are killed by herbicide application they decay and release these nutrients back into the water. Although these facts are undeniably true, there are many unintended consequences if invasive plants are allowed to grow unchecked.

The primary plants that the US Army Corps of Engineers and the Florida Fish and Wildlife Conservation Commission are actively managing are water hyacinth and water lettuce. These floating invasive plants have plagued Florida waters for over a century and are problematic for several reasons.

1. Incredible growth rates. Depending on temperature, these plants have the potential to double in number every 7-10 days. Though this doesn't sound like much, one water hyacinth becomes 1 acre in 4 months. If control is delayed even longer, 50 acres can rapidly become 100 acres. Before long, the problem becomes overwhelming.
2. Floating plants can dramatically impact fishery health. Though a small raft of plants can provide shade and structure for game fish, larger patches are harmful as they reduce dissolved oxygen in the water. These floating plants greatly reduce wave action and block light to phytoplankton, both of which add oxygen to water. Additionally, these plants will naturally drop leaves as they age. As this organic matter decays, oxygen in the water is further reduced. The result is low oxygen that is not suitable for habitation by fish.
3. Reduction in beneficial native plants. Native plants are extremely valuable to our aquatic ecosystems. They absorb nutrients from the water, provide shelter and habitat to fish, and ultimately support the entire food web. However, invasive plants have growth rates that often far exceed that of desirable native plants. If left to grow unchecked, the invasives will shade out the native plants until few are left to support the complex ecology of our lakes.
4. Floating plants like water hyacinth and water lettuce provide harbor and safety to mosquito larvae. In open water, mosquito larvae will be found and consumed by a number of fish species in the lake. However, floating plants will bunch together and provide refuge for the larvae and protect them from feeding fish. This is why the first mosquito control programs in Florida focused much of their efforts on floating plant control.

It was said in the article that the herbicide glyphosate is used to control these plants and that it contains phosphorus. Therefore, spraying glyphosate for plant control adds even more nutrients that will promote further algae blooms. Although glyphosate does contain phosphorus and is labeled for management of aquatic plants, very little if any glyphosate is used on Lake Okeechobee for floating plant management. The primary reason for this is that glyphosate is relatively non-selective and causes too much injury to desirable native

plants like bulrush, maiden cane and spike rush. Instead, the primary herbicides used are diquat, penoxsulam, flumioxazin, and 2,4-D. None of these herbicides contain phosphorus and are used interchangeably in order to provide effective control of floating plants while not harming desirable native plant species.

Another statement from the article was that suspending the floating plant control program for a little while will do no harm. Unfortunately, we have experience on Lake Okeechobee with this very tactic. Algae blooms were occurring in 1986 and both public and elected officials required that spraying be suspended. They were using the same logic mentioned above that managing these plants is resulting in nutrient release that is exacerbating the algae bloom. The moratorium on spraying lasted for 5 months. When the moratorium ended, floating plants covered over 8,000 acres and were causing harm to the lake. To get this situation under control required nearly 2 years of spraying herbicide from airboats and helicopters, with a final cost of \$2.5 million in 1986 dollars. This situation exemplifies why FWC operates under a policy of “maintenance control”. This means that floating plants are actively managed such that they are kept at very low levels. This allows low levels of herbicide to be used since only a few plants are present. By allowing the problem to balloon to large densities results in ecological harm to the waterbody, requires large quantities of herbicide, and much greater expense to the state.

The FWC is dedicated to protecting Florida’s natural resources. To do this, they spend in excess of \$1,000,000 annually on invasive plant research. The University of Florida – IFAS, US Army Corps of Engineers, and other universities collect data and formulate solutions that are put into practice on our state lands and waterbodies. Our collective goal is to prevent the growth and spread of invasive plants so that our beneficial native species can proliferate.

The algae blooms that are plaguing Lake Okeechobee are harmful and we desperately need a plan to help prevent this in the future. However, the solution is incredibly complex and many knowledgeable scientists and legislators differ over which path to take. Though we all agree that something needs to be done, our data and experiences teach us that stopping the management of invasive plants will have a number of negative consequences that will surely outweigh the positives.

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