

LAKE ISTOKPOGA

HABITAT MANAGEMENT PLAN

SUMMARY



UF | IFAS
UNIVERSITY of FLORIDA



Lake Istokpoga Habitat Management Plan SUMMARY

Prepared For

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This document summarizes and references the main contents of the Lake Istokpoga Habitat Management Plan. The plan in full can be accessed at the website: lakeistokpoga.wordpress.com

INTRODUCTION:

What is a Habitat Management Plan and Why Do We Need One?

Lake Istokpoga is the 5th largest natural lake in Florida and is home to many different plant and animal species. In addition, a diversity of people use and care about the lake. It is the mission of the Florida Fish and Wildlife Conservation Commission (FWC) to manage fish and wildlife resources for their long-term well-being and the benefit of people; this includes managing the aquatic and terrestrial plants that form habitats for these fish and wildlife resources.

This Habitat Management Plan is a document that will guide FWC's habitat management actions on Lake Istokpoga. It was created by local community members and strives to balance the needs and preferences of the various stakeholder groups who use the lake as well as the lake ecosystem and its fish and wildlife inhabitants.

The complete Lake Istokpoga Habitat Management Plan can be found at the project website: lakeistokpoga.wordpress.com. This document summarizes the plan and tells the story of how the plan was created.

So why do we need a Habitat Management Plan in the first place? Well, to start with, Lake Istokpoga does not function as a natural lake. Due to a variety of factors, like water level regulation, shoreline development, and the presence of non-native invasive plants, habitats on the lake must be actively managed to ensure optimal conditions exist for lake wildlife and the people who use the lake. There are a variety of different ways people use Lake Istokpoga, such as for fishing, birding, hunting, general wildlife viewing, or simply as a place to live and enjoy. This Habitat Management Plan balances the needs of these different users with the needs of the fish and wildlife and the lake ecosystem.

BACKGROUND:

How Did the Plan Get Created?

In Fall of 2017, FWC contracted a team out of the University of Florida (UF) to work with local stakeholders and create this Habitat Management Plan. The process included multiple steps so the team could make sure all of the different stakeholder perspectives surrounding the lake were included in how they want the lake to be managed.

Step 1: The Situation Assessment

At the start of the project, UF team members spent time around Lake Istokpoga conducting a “situation assessment”. This exercise was a chance to introduce the UF team and the project to stakeholders and to identify who uses the lake, what the sources of conflict were, what issues people were concerned about, and what people would like to see in lake management. The situation assessment included in-person interviews with community members, observation of lake-related meetings, and an introductory public meeting.

The situation assessment provided important information for designing the rest of the process. It allowed the UF team to identify the different stakeholder groups around the lake, and the community shared a variety of concerns and perspectives regarding the lake and its habitat. The most common concerns and issues raised by the public were:

Concerns about declines in lake wildlife: Several stakeholders shared concerns about perceived declines in fishing and observed declines in catch of bass, crappie, and bait fish (shiners). In addition, some were concerned about declines in duck populations on the lake, as well as what seemed to be declines in frogs and other wildlife, and some shared the worry that lake biodiversity was threatened by current management approaches.

Habitat and vegetation loss: Stakeholders also expressed concerns about the loss of habitat, particularly marsh habitat and submersed aquatic plants, on the lake. Many wanted to find out the cause for the loss of the underwater plants. At the time of plan development, the concerns of many Lake Istokpoga stakeholders were focused on the loss of invasive hydrilla as a bass/angling habitat.

Nutrients: Many were also concerned about nutrient runoff into the lake. This included concerns about runoff from yard fertilizer as well as the flow of nutrients into the lake from Arbuckle Creek. Many stakeholders felt this was associated with a decline in lake water quality.

Water levels: People were also concerned about lake water levels and their impacts on fish and access. Some discussed the fact that water levels are not naturally fluctuating and the impact this has on plants and habitat in the lake. Others worried that a drawdown would

impact their ability to access the lake. They also questioned what the impact was on fish and wildlife when the water levels were dropped.

Management: Many stakeholders were frustrated with and concerned about management of aquatic plants on the lake. Some felt that management actions were not grounded in science and that they were negatively impacting the lake, that there was no coordination among agencies or groups, and that managers did not listen to stakeholder input. A few stakeholders did not feel they could meaningfully participate in lake management decision-making, and that decisions were made regardless of public input or feedback, and an overall lack of trust in management was evident.

Herbicide Use: There was a diversity of perspectives regarding herbicide spraying on the lake. Though concerns about spraying were not universal, many stakeholders expressed strong concern over spraying activities. Some concerns were rooted in the impacts of spraying and worries that it had eradicated desired plant species, that it might make fish unsafe to eat, and that it was negatively impacting fish populations and fishing activities.

Overall, the situation assessment made it clear that the stakeholders around Lake Istokpoga are a passionate, engaged community. Many people view the lake as their place, regardless of whether they are long term residents or people who visit seasonally. Even though there were differences of opinion among stakeholders, all shared a passion for the lake, a concern for its continued viability, and a desire to see it thrive both now and into the future.

Step 2: Formation of the Advisory Committee

Based upon the information learned during the situation assessment, the UF team then formed a permanent committee of representatives from key public stakeholder groups who have a vested interest in the lake. This Lake Istokpoga Habitat Advisory Committee (LIHAC) met regularly to develop the habitat management plan.



LIHAC members on an airboat field discussing lake habitat (left) and refining habitat management plan objectives and actions during a LIHAC meeting (right).

Step 3: Connecting the LIHAC process with the wider community

The LIHAC connected with the broader community through public meetings and a stakeholder survey. The public meetings updated the public on development of the habitat management plan, asked for feedback and input on draft goals and objectives, and provided information on key issues on the lake. The LIHAC, UF, and FWC also collaboratively drafted a stakeholder survey in order to get additional input from the community and to reach those who did not personally engage with the committee or through public meetings. This survey was sent in the mail to a random sample of homeowners and anglers in the area, and a link to an online version was shared through emails and social media. In addition, the UF team maintained a website to document the development of the plan; all meeting reports and presentations were posted on the website: lakeistokpoga.wordpress.com.



Participants in the second Lake Istokpoga Public Meeting.

Step 4: Iterations between the LIHAC and FWC

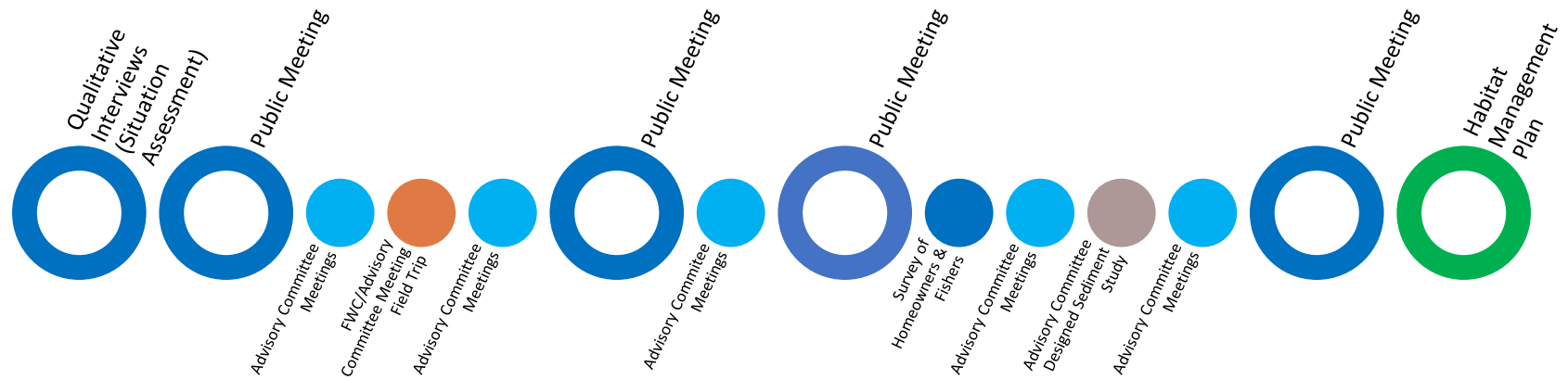
A draft of the Habitat Management Plan, created by the LIHAC, was then sent to FWC for review and input. FWC's comments were then addressed by the LIHAC in subsequent committee meetings.

Step 5: Presentation of the full plan draft to the public

A draft of the complete habitat management plan will be presented at a public meeting on January 14, 2020. In addition, it has been posted on the project website for all stakeholders to review and provide comments back to LIHAC and the UF team.

Step 6: Plan presented to FWC

A final draft of the Lake Istokpoga Habitat Management Plan will be presented to FWC by February 22, 2020. FWC will then take ownership of the plan and use it to guide management activities on the lake, along with stakeholder input. Because the LIHAC and FWC consider the plan to be a “living document”, FWC will continue to have public meetings and other engagement opportunities to discuss on-going management progress and evolution of the plan.



This figure shows a summary overview of the project's stakeholder engagement process. Dark blue colors indicate wider public engagement. Light blue indicates LIHAC meetings, and each circle represents a series of meetings. Additional colors indicate additional steps in the process.

THE PLAN:

Overarching Goal and Guiding Principles for Lake Management

During the course of habitat management plan development, the LIHAC identified several goals that were developed into overarching guiding principles for habitat management on Lake Istokpoga. Their vision of lake management was that habitat in Lake Istokpoga should be managed to support a diversity of wildlife species and human uses. Below are the eight (8) principles created by the LIHAC:

Principle 1: Balance multiple needs and perspectives in habitat management.

Habitat management on Lake Istokpoga should consider the many different needs and perspectives of those who use the lake. For example, anglers, environmentalists, lakeside homeowners, and duck hunters may have different needs and priorities when it comes to lake management. The habitat management plan balances these different needs and uses of the lake.

Principle 2: Consider habitat diversity, connectivity, and dynamics.

To conserve wildlife and support human uses of the lake, the plan promotes a diversity of habitat types and species. Many fish and wildlife populations rely on a mixture of habitats to complete their life cycle and to thrive, and management actions should take this into account.

Principle 3: Define focal habitats for wildlife and stakeholder use to focus management and restoration.

The plan clearly defines focal habitats (habitats that are important to wildlife conservation and/or human uses) in terms of structure, species composition, or other metrics. Both scientific and stakeholder knowledge were used to define these focal habitats.

Principle 4: Set habitat targets (ranges) while accounting for wildlife and human use needs and the dynamic nature of aquatic habitats.

The plan sets target ranges for the defined focal habitats or vegetation types. These target ranges take into account natural changes in lake habitat and help guide lake managers in planning habitat management activities.

Principle 5: Set targets by lake region if necessary.

If it becomes important or necessary in future, the plan suggests that habitat targets and actions could be defined by within-lake region.

Principle 6: Consider medium and long-term consequences of habitat management actions.

The plan states that management actions and plant treatment operations on the lake should be developed with consideration of what habitat is likely to develop afterwards.

Principle 7: Use active revegetation when abundance of focal species/habitats falls drastically below target range.

The plan recommends that FWC replant native plant species to help desired focal plants and habitats recover in the lake.

Principle 8: Improve communication between agencies and members of the public regarding lake management activities.

The plan recommends that steps be taken to make sure the public is informed of present and future management actions, to maintain a dialogue with the public, and to make sure people have access to updated information.

ISSUES AND ACTIONS:

What Does the Plan Say?

A variety of concerns and interests were raised by stakeholders and LIHAC members during the situation assessment and throughout the Habitat Management Plan creation process. These topics fell broadly into 6 categories: Focal Habitats, Access and Navigation, Invasive Species, Management Operations, Communications, and Research/Evaluation. This chapter outlines the main issues and concerns and how the habitat management plan addresses each, and includes page numbers referencing where to find them in the full Habitat Management Plan.

FOCAL HABITATS: What plants and habitats do we want to see on the lake?

Interest/Concern	What the plan says:
Loss of habitats on the lake, including submersed plants and marsh habitat.	Establishes focal habitats and defines how much of each should be on the lake.

Stakeholders and community members shared concerns about the loss of habitat in Lake Istokpoga, particularly declines in submersed aquatic plants (including hydrilla) and other desired plant species. This plan addresses those concerns about habitat loss by establishing focal habitats and defining targets for each of them (p. 60 and 64).

LITTORAL HERBACEOUS MARSH: The plan sets a target goal of 4,000-5,600 acres of freshwater marsh, which would be 15-20% of the lake's total area. It also recommends FWC makes sure the marsh habitat is as connected and continuous as possible (taking into account trails for boating and access).

NATIVE SUBMERSED AQUATIC VEGETATION: The plan sets a target goal of at least 1,000 acres, or 4% of the lake area, for native submersed plants (like coontail and eelgrass in the pictures below). The plan recommends FWC to manage its activities on the lake to make sure to minimize negative impacts on these native submersed plants, and, when possible, to transplant native species or conduct periodic managed drawdowns to reach the target minimum level.



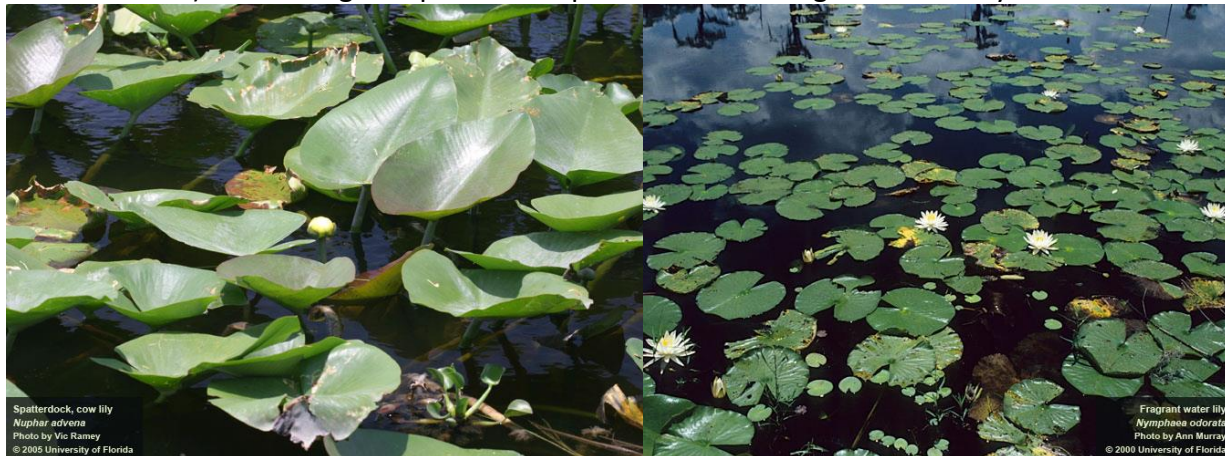
HYDRILLA: Acknowledging that hydrilla, a nonnative invasive plant, is also desired by many lake stakeholders, and that concerns were raised about the current lack of hydrilla on the lake, the plan sets a preferred minimum level of 2,500 acres for hydrilla, or 9% of lake area. If/when hydrilla returns to Lake Istokpoga, FWC will manage hydrilla per the FWC hydrilla management position statement, and will minimize activities that would reduce hydrilla below 2,500 acres where and when possible. Exceptions are in place in the plan to manage hydrilla to avoid impacts to navigation, water control structures, flood control and irrigation, native vegetation, and endangered species. The plan recommends FWC ensure hydrilla not expand under these situations and allows for its treatment or removal.



BULRUSH: The plan recommends FWC manage for a minimum of 280 acres of bulrush on the lake, or 1% of the lake. It also recommends FWC manage plant management activities to minimize impacts on bulrush, use selective herbicides that will minimize impacts on bulrush, and explore projects that encourage expansion of bulrush on the lake (for example, transplanting and managed drawdowns).



NATIVE FLOATING-LEAF PLANTS: The plan sets a target goal of 600-1,700 acres (or 3-4% of the total lake area) for floating-leaf plants like spatterdock and fragrant water lily.



The plan also identifies additional focal plant communities, such as cattail, shallow-water native emergent vegetation (such as pickerelweed, spikerush, and arrowhead), native aquatic grasses (*Paspalidium* (“Kissimmee grass”), maidencane, cupscale), and primrose (a non-native noxious species which hinders the growth of native beneficial plants). The plan recommends FWC minimize impacts of their management activities on those focal species the LIHAC identified as desirable with the prescribed target ranges, while controlling expansion of species, such as primrose, to curtail its impact on other native species.

**RESEARCH, EVALUATION, AND ADAPTIVE LEARNING:
What happened to the submersed vegetation?**

Interest/Concern	What the plan says:
Loss of submersed plants in the lake, including hydrilla and native plants like eelgrass	Conduct research to figure out what might have caused declines in these plants

In addition to wanting to see more submersed plants in Lake Istokpoga, people also wanted to know what had caused them to decline in the first place. The LIHAC discussed several possible causes, such as hurricane impacts, elevated levels of nutrients coming into the lake, changes in water quality, and wildlife that eat these plants (like the non-native apple snail).

The plan addresses this concern by recommending FWC work with other agencies, such as Highlands County Natural Resources, the Department of Environmental Protection, and the South Florida Water Management District, to conduct research to explore what might have caused declines in submersed plants on the lake (p. 76). This research may include developing models to look at the relative impact of different factors in lakes, running experiments in labs and in lakes, reviewing and synthesizing papers and reports on what has been found in other places, and pulling together all the available information about things like nutrients and storm water treatment in the area.

One of the questions the LIHAC and the community had during the plan development process was if residual herbicides were present in lake sediments, and if that might be affecting plant growth in the lake. FWC contracted with UF's Center for Invasive and Aquatic Plants (CIAP) to research this question. CAIP researchers found the sediments tested around the lake contained no detectable levels of herbicides, and that hydrilla can grow in Lake Istokpoga's sediments (p. 98).

The plan also recommends FWC evaluate management actions (evaluation = documenting conditions before and then after actions to figure out their effectiveness) and, when possible, conduct management actions in ways that help us learn (p. 75). For example, experiment with different management approaches and using controls (areas where actions aren't implemented) and replication methods (doing the actions in multiple different places).

ACCESS AND NAVIGATION: Making sure people can get to and use the lake

Interest/Concern	What the plan says:
People need to be able to access the lake	Make sure to maintain access and develop a network of trails

Many different people use the lake for activities like fishing, hunting, and wildlife/bird viewing, so it is important to make sure that people are able to access the lake and make their way around the lake. The plan therefore recommends FWC to make sure lake access is maintained from public boat ramps and navigable creeks, and to develop a network of trails in specific areas of the lake to enhance recreational access and navigation (p. 67). The plan balances the needs of people with the needs of lake wildlife, so it also recommends FWC ensure that the trails developed don't overly fragment (or break up) habitat for fish and wildlife.

INVASIVE PLANT SPECIES:

Interest/Concern	What the plan says:
There are nonnative, invasive plants on the lake	Manage invasive plants in a way that minimizes collateral damage to other lake plants or the lake ecosystem

Several species of non-native invasive plants grow and thrive on Lake Istokpoga. These species can have negative impacts on the lake ecosystem and human uses (for example, by shading out native plants or blocking waterways), but they also provide habitat and food for species of interest like fish and ducks. This plan balances these tradeoffs by recommending that FWC manages invasive plants in a way that minimizes their adverse impacts, while maintaining the plan's focal habitat goals (p. 68). In other words, use management techniques that control invasive plants, but in a way that limits collateral damage to other desirable plants or the lake ecosystem. The plan also recommends FWC to consider whether it is possible to manage some invasive plants to higher thresholds and whether that would reduce overall spraying activities or reduce collateral damage to other plant species.



Water lettuce and water hyacinth are examples of non-native, invasive plants on Lake Istokpoga.

MANAGEMENT OPERATIONS: Conducting management actions on the lake

Interest/Concern	What the plan says:
Substantial (but not universal) concern about the level of herbicide spraying	Suggestions to expand the habitat management toolbox and explore alternative approaches to minimize impacts of spraying, and to pilot test new approaches to spraying operations on the lake
Concerns about applicator behavior	Enhance oversight and training of applicators
Concerns about how decisions are made	Actions to improve transparency and communication

A number of stakeholders and community members shared concerns about how habitat and invasive plants were managed on the lake. For example, substantial (but not universal) concern was expressed about herbicide spraying. In response to these concerns, the plan sets out explicit objectives and actions to direct the way habitat is managed on the lake (p. 71-74).

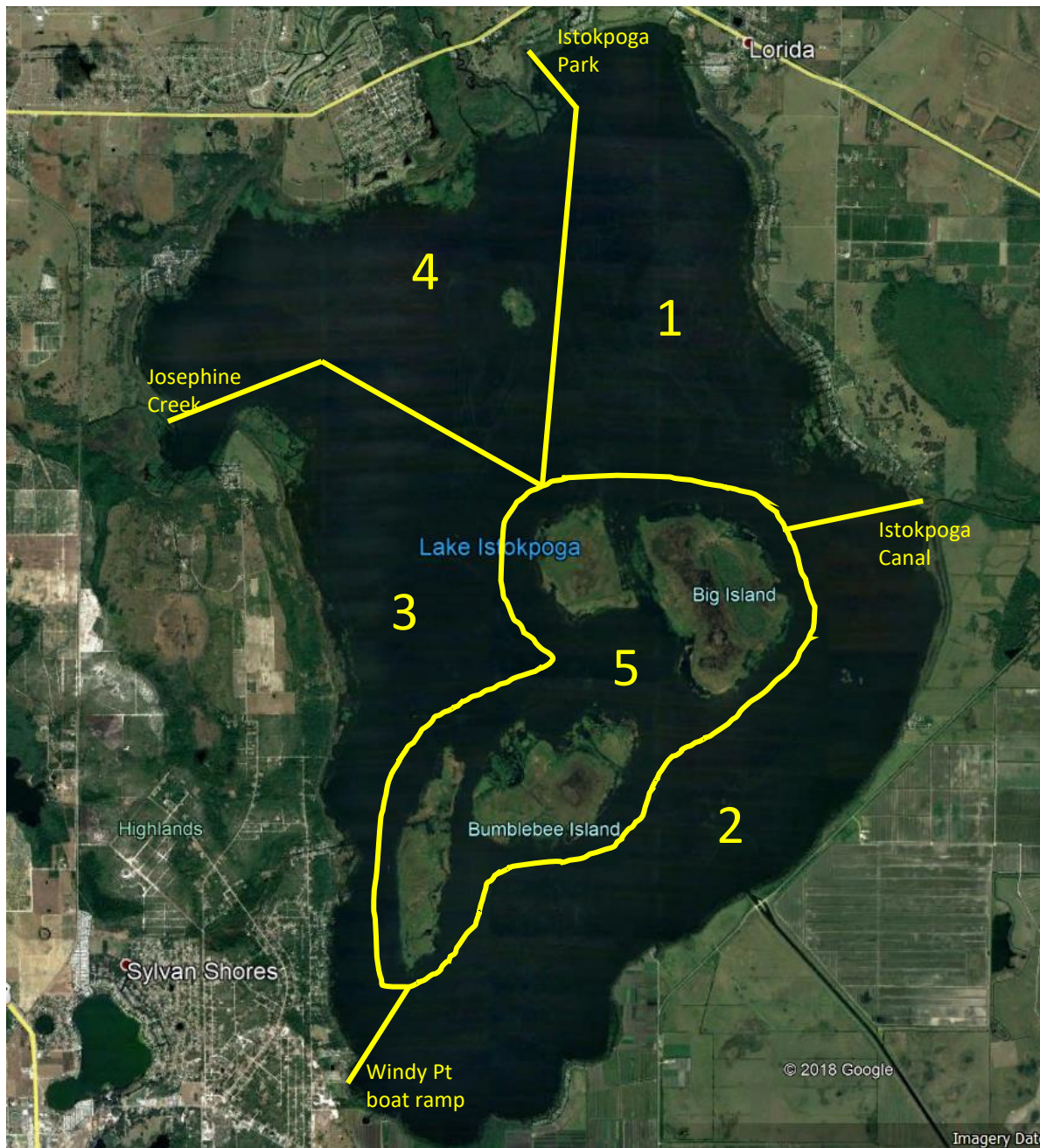
One concern cited by the community was a lack of transparency about FWC's habitat management actions. The plan addresses this by recommending FWC create and share annual habitat action plans and document the outcomes of habitat management actions as feasible.

The plan also recommends FWC expand the habitat management 'toolbox' by considering additional methods like mechanical harvesting, prescribed burns, and drawdowns to manage habitat.

The plan recommends FWC establish policies that minimize the impacts of spraying to fish and wildlife resources and the public. For example, scheduling management actions to minimize conflicts with things like spawning and nesting and public use (like fishing and hunting) as much as possible, and developing a comprehensive list of important timing considerations for fish and wildlife and stakeholder concerns.

The plan also recommends FWC minimize the overall level of herbicide use on the lake and pilot test different approaches to using herbicides on the lake. The first pilot test will explore dividing

the lake into five (5) management zones and treating only two (2) zones at a given time, with clear communication to stakeholders which zones have work occurring. A second pilot test will occur in December through February and explore conducting a 6-week spraying pause for two of the zones (e.g., zones 2 and 4) followed by another 6-week pause for the next two zones (e.g., zones 1 and 3). Herbicide treatments will occur Monday-Thursday only. Exceptions would be in place for impacts to endangered species, access/ navigation/ flooding concerns, use of mechanical harvesting, and large-scale treatments that have been publicly vetted.



Conceptual model of zones for management operations.

The plan also recommends FWC improve coordination across stakeholder groups, and continually review herbicides that are used in order to ensure their use is having the desired effect, while minimizing impacts to fish, wildlife and other plant species.

Additionally, with regard to concerns about how FWC contractors were spraying, the plan recommends FWC avoid spraying under certain conditions (like high winds), enhance monitoring of applicators and ensure they are trained in best management practices, and consider training applicators in communication skills to better respond to questions from lake users.

COMMUNICATION

Interest/Concern	What the plan says:
Need better communication between FWC and the community	Recommends multiple methods for FWC to improve communication

This plan also reinforces the importance of communication between community members and FWC. The plan recommends FWC improve communication using a variety of methods, including conducting public forums, posting information, providing maps to show where management actions will and have occurred, and creating a document library where all relevant information about the lake and its conditions can be shared (p. 74).

ADDITIONAL ACTIONS FOR FWC TO CONSIDER

Other issues were raised that don't directly apply to habitat management, but do fall under the jurisdiction of FWC. These topics were included as an additional section in the plan (p. 76). For example, the plan recommends consideration of enhancing fishing opportunities by placing artificial structures (fish attractors) in some areas of the lake that currently don't have structure. It was noted that this action may partially make up for the loss of fishing opportunities due to the decline of submersed aquatic plants. It was also noted, however, that some stakeholders are concerned about putting artificial things into a lake that is seen as largely natural. Further consideration of these issues is encouraged in the plan.

The plan also recommends collaborating with other agencies to improve public access facilities and providing opportunities for shoreline fishing and nature viewing, as elaborated in the next section.

MONITORING:

How are things going?

In addition to outlining what should happen on the lake, the Habitat Management Plan also has a chapter devoted to monitoring (p. 77). This chapter includes monitoring of management actions and approaches to see how well things are going and what is/isn't working. It also recommends FWC develop a wildlife surveying protocol to monitor the health of the lake's ecosystem.

ACTIONS FOR OTHER AGENCIES:

What else would we like to see?

Issues and concerns on Lake Istokpoga were diverse, and some of those raised by stakeholders are not fully within the mission and statutory authority of FWC. Therefore, the final chapter of the Habitat Management Plan outlines actions other agencies and groups could consider (p. 79):

Change in water level schedule.

LIHAC members and the wider public recognize the impact of lake water level stabilization on aquatic plants, particularly on muck accumulation in the lake. However, they also recognize the complicated nature of water level changes, as they would need to take into account the needs of lakeside homeowners, lakeside businesses, and other stakeholders concerning flood control and access to the lake and water. Agricultural interests must also be considered for permitted irrigation dependent on Lake Istokpoga. Muck build-up in the lake and canals was a frequently-cited concern of community members, as was the negative impact water level stabilization has on the lake's ability to regulate habitat naturally. Therefore, the committee recommends exploring changes to the water level schedule and the implementation of regularly-scheduled managed drawdowns of the lake to allow muck sediments to dry and decompose and provide opportunities for focal species to expand.

Collaborate on infrastructure improvement at public boat ramps and other public access points.

The LIHAC recommends creating opportunities for shoreline fishing and nature viewing along the lake, as well as, creating shoreline at Windy Point Park for boats that pull up. In addition, the committee recommends improving public facilities around the lake. FWC is encouraged to collaborate with other agencies and partners to maintain and/or upgrade public access facilities, such as improving boat ramps and/or improving parking at Lake Istokpoga Park.

Reduce nutrient inputs into the lake.

Water quality in the lake and entering the lake was repeatedly raised as a concern by members of the LIHAC and the wider community. Concerns included the flow of nutrients into the lake from Arbuckle Creek as well as fertilizer use by lakeside residents and associated yard nutrient runoff. There was the perception of a resulting decline in water quality, with dark water and algae blooms. Therefore, the LIHAC recommends actions to reduce nutrient input into the lake.

Reach out to community members to communicate best practices, understanding of impacts to the lake, and ensure compliance with regulations regarding vegetation and land management.

Lakefront homeowners have the right to remove aquatic vegetation directly lakeward of their property, subject to permitting within defined strict limits, and many homeowners make use of these rights. In addition, land management activities on their property can impact the lake's ecology on a cumulative basis. Acknowledging the desire for homeowners to preserve their viewsheds and access to the lake, the plan includes a recommendation to increase outreach to homeowners about vegetation and land management to promote adherence to best management practices and conservation-oriented practices.

Lakeshore homeowners and their contractors often undertake spraying and other habitat management activities on and near their properties. These activities are governed by the homeowner's statutory rights and specific regulations. While the actions of individual homeowners are relatively small-scale, collectively they can affect the condition of nearshore habitats. The plan therefore recommends enhancing outreach to homeowners about best management practices and voluntary conservation-oriented actions.

In addition, the plan recommends outreach to community members about the various causes of declines in water quality and impacts to the lake, which might include lawn maintenance activities, poor water flow in canals, septic systems, trash, or other impacts or activities.