

Final

**MINUTES OF THE MEETING  
of the  
HARRIS CHAIN OF LAKES RESTORATION COUNCIL  
May 6, 2016**

The regular meeting of the Harris Chain of Lakes Restoration Council (Council) was held at 9:00 a.m. on May 6, 2016 at the Lake County Board of County Commissioner Chambers, 315 West Main Street, Tavares, Florida.

**Council Members Present**

Robert Johnson, Chairman  
Skip Goerner, Vice-Chairman  
Don Nicholson  
Sid Grow

**Council Members Absent**

Keith Truenow  
Stephanie Bishop  
Hugh Davis  
Dr. Ed Schlein

John Stump, ex officio member

**TAG Members Present**

Roland Fulton (SJRWMD)  
Dennis Renfro (FWC)  
Kevin Coyne (DEP)  
Mike Perry (LCWA)

**TAG Members Absent**

Mark Hoyer (UF)

**1. CALL TO ORDER**

Vice-Chairman Goerner called the meeting to order at 9:01 a.m.

**2. INVOCATION AND PLEDGE OF ALLEGIANCE**

Councilman Nicholson gave the invocation. The Pledge of Allegiance followed.

**3. COUNCIL ROLL CALL; REMINDER FOR OTHERS TO SIGN IN**

Vice-Chairman Goerner called the roll. Council members Truenow, Bishop, Davis, and Schlein were absent. Mark Hoyer (UF) of the Technical Advisory Group (TAG) was absent, but was represented by Dr. Dan Canfield (UF).

**4. APPROVAL OF MINUTES**

There was no quorum for approval of minutes. Vice-chairman Goerner suggested several revisions to the April minutes. Denis Frazel, Harris Council Administrative Support, noted the revisions and would include them in a revised April minutes to be approved in June.

**5. PRESENTATIONS / ACTION ITEMS**

**A. Update on the Planting of Vegetation in Lake Apopka - Bruce Jagers, FWC**

Chairman Johnson introduced speaker Bruce Jagers, Florida Fish and Wildlife Conservation Commission (FWC). Mr. Jagers reported that he worked in the FWC aquatic subsection out of Inverness. Today's presentation would specifically address the planting of spatterdock in Lake

Apopka and would consist primarily of a review of a presentation to the council made in October 2014.

The title of the presentation was “Lake Apopka—Reestablishing Fish and Wildlife Habitat in a Highly Degraded, Hypereutrophic Water Body.” The focus of the project was on reestablishing the aquatic plant spatterdock (*Nuphar* spp.) and giant bulrush (*Schoenoplectus californicus*), as the current conditions (in 2014) showed less than 1% aquatic vegetation in Lake Apopka. The goal of the project (established by the Tiger Team) was to reestablish 10% aquatic vegetation in Lake Apopka within 10 years. Both of the target aquatic species were native and could survive in deeper water.

The challenges associated with the planting included poor light penetration, large deposits of flocculent mud, extreme wind fetches, and limited littoral areas, as 20,000 acres of marsh is cut off from the lake by levees. In addition, the lake functions as a reservoir, as there is 5 feet of water within 50 feet from the levees at a minimum desirable lake level. The timing for the planting effort was opportune because lake levels were two feet below low pool levels, which allows the plants to establish in less than three feet of water. There were also suitable substrates for planting (firm peat deposits).

The long-term goal was to establish submerged aquatic vegetation behind “wave breaks” created by the initial plantings as shown in a schematic of the planting scheme and planting zones in three areas of the lake. Spatterdock zones were located along the north, east, and west shorelines. 29,984 plants were installed through July 1, 2013. The initial planting addressed proposed methods to be used for large-scale spatterdock plantings, plant survivability, and establishment.

Three plant types were evaluated in 2012, including bare-root plants (small rhizomes), wild-harvest plants (large rhizomes), and nursery-grown plants (UF greenhouse). During spring, summer, and fall of 2013, 25,000 wild-harvested spatterdock, 10,000 nursery grow-out spatterdock, and 500 UF greenhouse spatterdock were planted. In spring 2014, another 50,000 wild-harvested spatterdock, 10,000 nursery grow-out spatterdock, and 300 UF greenhouse spatterdock were planted.

The survival rates from the planting effort were: wild harvest 60%, nursery grow-out 75%, and UF greenhouse grow-out 80%. The wild harvested had the lowest survival rate, but pricing was much more competitive at \$2.58/plant. In comparison, the nursery plants cost \$6.80/plant, and the UF greenhouse grow-out were about \$27.80/plants. The total cost, as of May 2014, was \$327,753. This effort yielded about 450 acres of aquatic plants (1.5% of the lake). One year after planting the individual rows of plants have expanded and merged, and massive root stocks have developed.

Mr. Jagers noted the keys to successful plantings were to use large rhizomes, plant during low water levels, use only sites with suitable substrates, and ensure nutrients are available for good plant growth. Mr. Jagers listed the constraints to successful planting: deep water, poor light penetration, wind/wave energy, availability of plant material to transplant, the long transport distances, and the potential toxicity of some sediments. The toxicity issue was raised because certain plants installed close to shore near the “pumphouse” area had limited success, whereas those further away were more successful. It was noted leaf yellowing and damage to plants near the pumphouse may indicate toxicity from sulfides/sulfates.

Chairman Johnson discussed the use geotubes to limit washout of plantings from wind events. Mr. Jagers noted the use of geotubes has been discussed by staff and is a possibility for future consideration.

Vice-Chairman Goerner remarked about the dramatic changes to the lake with the loss of North Shore Restoration Area (NSRA) marshes, the effect of wind events on sediment resuspension, and the lack of a plan to reconnect the marsh to the lake. Discussion ensued about testing and availability of data for pesticides and phosphates. Mr. Jagers reported FWC is involved in the testing of waterfowl. Mr. Dennis Renfro, FWC, reported FWC would be testing waterfowl for contaminants during the nesting season this year. Chairman Johnson noted the Department of Health (DOH) does not prohibit the consumption of fish from Lake Apopka, but he would like to see testing on fish from the NSRA.

Dr. Rolland Fulton, St Johns River Water Management District (SJRWMD), noted the most recent pesticides survey was 2011. The data from 2011 used for the DOH advisory contributed to the SJRWMD decision to prohibit duck hunting in the NSRA. Dr. Fulton reported the most recent sampling for pesticides in fish was on 5/4/16, in which 177 samples were collected at 36 sites. The samples consisted of whole mosquitofish or minnows. There was also sampling of hogs in 2015 resulting in an advisory on hogs based on those analyses. The reason for the sampling was due to the hunting of hogs in the NSRA and whether they were edible. The advisory indicated no limits on hog consumption from the NSRA.. Chairman Johnson requested to see the results when available.

**B. Restoration of the Harris Chain of Lakes: Return to Neverland—How Shifting Baselines Affect Eutrophication Restoration Targets - Dr. Dan Canfield, UF**

Chairman Johnson introduced Dr. Dan Canfield, University of Florida. Dr. Canfield presented an overview of his involvement with Lake Apopka, the change in the lake from a macrophyte to algae-dominated waterbody, and the history of efforts to restore the Lake. Dr. Canfield discussed the concept of restoration, and the need to pick an historic period in which to restore. Dr. Canfield described the shifting baseline over time for such restoration and proposed management rather than restoration as a target. Dr. Canfield discussed philosophy, posing the questions what have you been taught? Why do you believe what you believe? What are your life experiences? Dr. Canfield advised his work of 37 years on the lake had yielded little results.

Dr. Canfield briefed the Council on trophic state, noting regional differences in algal production correlate with geological structure of the watershed; and lakes in agricultural, calcareous regions are greener than lakes in forested, granitic watersheds. Regardless of trophic state, the public perception of the quality of a lake is based on water clarity.

Dr. Canfield showed a showed slide of the 1986 algal bloom on Lake Okeechobee that the South Florida Water Management District (SFWMD) asked him to evaluate. From his analyses, Dr. Canfield was the first to describe the process of eutrophication, which is the nutrient enrichment of waters, which results in an array of systematic changes. These changes include the production of algae and other aquatic plants, the deterioration of fisheries, the deterioration of water quality and other changes, which are objectionable and interfere with water use. Referring to a slide showing the results of rotenone sampling in lakes of varying trophic status, Dr. Canfield noted a direct relationship between sportfish and chlorophyll, in which more eutrophic waters (higher chlorophyll a) produce more fish biomass. The result is trophic state and the concept of water

quality are not synonymous. Dr. Canfield also showed the relationship between chlorophyll and phosphorus (P) noting when P concentrations are above 100 ug/L nitrogen is the limiting growth factor. Much of the algal production is more related to elements of hydrology in lakes, including the inputs of total P from rainfall, lake level fluctuations, and resuspension of sediments.

Dr. Canfield discussed further the evolution of legislative attempts at lake management including the 1987 Surface Water Improvement and Management Act (SWIM) focusing on nonpoint nutrient control of phosphorus, and the development of numeric nutrient criteria and total maximum daily load (TMDL) allowances by the Environmental Protection Agency (EPA). Dr. Canfield showed a graph of total P as a function of water input for Lake Apopka and pointed out that to meet the current TMDL of 146 tons/year, additional water could not be added to the lake. The TMDL could only be achieved if it does not rain.

Dr. Canfield moved on to a discussion of the Harris Chain of Lakes Restoration Council, reading excerpts from the enacting legislation for the Harris Chain program. Dr. Canfield described the powers and duties of the Council and the technical advisory committee, noting the advisory committee is composed of spokespeople for the agencies. Dr. Canfield listed the core missions of FWC, SJRWMD, the Department of Environmental Protection (DEP), and the Lake County Water Authority (LCWA), noting these agencies, and their spokespeople answer to separate boards and are protective of their interests. Dr. Canfield speculated there may be an inherent conflict with this arrangement. According to the Dr. Canfield's interpretation of the Florida statute FWC, SJRWMD, FWC, and FDEP are to bring plans to the Council for audit and the Council is to bring such plans to the legislature, though no plans have been brought forth since 2001.

Dr. Canfield reiterated the shifting baseline theme of the presentation, referring to Lake County, and how it shifted from an agricultural community to a more urban community with the buyout of north shore farms. The prevailing notion was the farms needed to go to save Lake Apopka. Graphs of precipitation trends presented by Dr. Canfield showed much rainfall in the 1940's then long-term drought related to the Atlantic Multidecadal Oscillation. This relationship suggests the lake eutrophication could be unrelated to former farming activity. Dr. Canfield noted the lake could be eutrophic with either an abundance of alga, or macrophytes. A lake with 60-70% of the bottom covered with macrophytes would be clear, with low algal chlorophyll levels, but boat movement would be impeded. The current public perception though, is at a 30% macrophyte coverage, aquatic weed control is needed. Currently, FWC is no longer eliminating the macrophyte hydrilla from lakes but simply managing it. In Lake Apopka, large-scale movement of sediments (mud) is a constraint on the reestablishment of macrophytes. Dr. Canfield discussed the installation of geotubes to break up wave action, allow sediments to stabilize behind the tubes, and provide substrate for macrophyte growth. In summary, Dr. Canfield speculated the simple solution could be multiple puncture to the NRSA dike, and reflood that area. The existing wetlands would be lost, but perhaps the mud in the lake would move into the flooded area. Also, FWC and SJRWMD need to inform the Council on what the plan is for all the agencies.

Chairman Johnson queried Dr. Canfield on how to get more action from the legislation. Dr. Canfield suggested the Council do a better job communicating to the legislature by involving a senator in Harris Council activities. Dr. Canfield also suggested the annual reports are too thick, and lack of a quorum at meetings is a problem.

Chairman Johnson proposed writing a letter to the Director of FWC, requesting a short form 5-year plan from all agencies involved. Chairman Johnson suggested an outline from each agency for the next five years, an update on progress in a month, with final results in two months. Both Chairman Johnson and Vice-Chairman Goerner indicated their top priority was reconnection of the north shore.

Chairman Johnson queried Susan Davis as to whether the Council reports are read by SJRWMD upper management. Ms. Davis reported her supervisor, Nick Abrams, the Governmental Affairs Manager, reads the reports, and everything he reads is briefed to the Executive Director. Ms. Davis suggested the Council comment to the Governing Board during public comment at the monthly Governing Board meetings. Vice-Chairman Goerner noted every year he spoke for the allotted 5 minutes but never had questions from the Board. Ms. Davis suggested Chairman Johnson meet with Executive Director, Dr. Shortelle and one-on-one meetings with Governing Board members. Vice-Chairman Goerner requested the Governing Board see the Council Annual Report and receive more communication from SJRWMD.

Chairman Johnson indicated the first order of business was to get a plan from FWC, and Johnson asked for an OK to proceed with a letter. Vice-Chairman Goerner suggested a workshop during the month to develop the letter. The Council decided to discuss the letter as an agenda item for the next Council meeting. Discussion ensued on which legislators were involved in the Harris Council activities.

## **6. COUNCIL & AGENCY QUESTIONS & ANSWERS**

Mr. Mike Perry, Lake County Water Authority (LCWA), reported on lake levels in Lake Apopka noting they have fallen below the minimum desirable elevation. Mr. Perry speculated SJRWMD may turn off flow to the NuRF until water levels recover. Mr. Perry reported the middle lakes below regulatory schedule, and Lake Griffin was below regulatory schedule but above the minimum desirable elevation.

Vice-Chairman Goerner queried Mr. Perry about the responsible parties for lake and waterway signage. Mr. Perry noted the LCWA budgets for signage and replaces damaged or missing signs as needed. LCWA will also add new signage based on public request, though the permitting time can be quite long.

Mr. Renfro updated the Council on activities in Emerald Island Area 3, noting the scraping down of material on the levees and some internal breaches have been started. In response to previous inquiries about permits, Mr. Renfro noted the project falls under a general permit. Mr. Renfro reported FWC, along with SJRWMD and Audubon gave a presentation to the leadership of Orange County and showed them the results of the planting on Lake Apopka. Chairman Johnson suggested the inclusion of geotubes in future planting activity.

Dr. Fulton, reported on an upcoming teleconference on the Upper Ocklawaha hydrological model for minimum flows and levels development scheduled for May 12, 2016, from 1-3 pm. Dr. Fulton reiterated Mr. Renfro's comment on Emerald Marsh Area 3 noting construction underway including breaching internal levees. Vice-Chairman Goerner requested a review of water quality data on Emerald Marsh where the levees are being breached. In addition, Chairman Johnson requested a briefing next month of hydrocarbon phosphate levels in Lake Apopka and where the samples are being taken.

**7. PUBLIC COMMENTS**

None.

**8. COUNCIL MEMBER COMMENTS**

A. Councilman Grow presented a newspaper article from Oklahoma discussing facility improvements on a lake in the area. The \$2.8 million project included parking for 400 boat trailers, with plans to double that size. Councilman Grow referred to the article as an example of how to look at the big picture, and improve facilities to draw people. Councilman Nicholson remarked about the float planes on Lake Dora, and inquired as to the expansion of this activity on other lakes. Mr. Perry discussed the challenges of competing uses and conflicts between float planes, boats, and the public.

Vice-Chairman Goerner noted as of July 1, new state legislation would be in place so the Council can recruit new members to fill vacancies.

John Stump thanked Dr. Canfield for his refreshing presentation and the importance of his words to him as a new meeting attendee. Mr. Stump supports a measured approach to improve light penetration, and some kind of effective means to connect the north shore.

Chairman Johnson reiterated discussion of the letter to FWC as an agenda item. The Chairman also recommended the wildlife tour, 11 miles long see the one-way drive, may make more difficult to reconnect marsh with new additions such as turnouts, viewing areas.

Vice-Chairman Goerner discussed the field trip to view the parabolic screen, noting through the use of the screen, water quality is improved, oxygenated water goes right back to the lake, and the system could be geared up to process over a million gallons of water per day. Vice-Chairman Goerner commented on the lack of a recording secretary to take notes at the event, and requested a staff person be in attendance at future field trips. Susan Davis, SJRWMD, agreed to provide a copy of the administrative support contract for review, per request.

B. The Next Scheduled Meeting is tentatively scheduled for June 3, 2016.

**9. ADJOURNMENT**

The meeting adjourned at 11:50 a.m.