

HARRIS CHAIN OF LAKES RESTORATION COUNCIL

REPORT TO THE LEGISLATURE

NOVEMBER 2009

In Compliance with Chapter 373.467 Florida Statutes

Issued By:

Harris Chain of Lakes Restoration Council

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Harris Chain of Lakes Restoration Council 2009 Report to the Florida Legislature

~ Executive Summary ~

Statutory Authority

The Harris Chain of Lakes Restoration Council (Council) was established by the Florida Legislature in 2001 (Chapter 373.467 Florida Statutes) with the powers and duties to: a) review and audit all data specifically related to lake restoration techniques and sport fish population recovery strategies; b) evaluate whether additional studies are needed, and; c) explore all possible sources of funding to conduct restoration activities. The Legislature also established the Harris Chain of Lakes Restoration Program (Chapter 373.468 Florida Statutes) which directed the Fish and Wildlife Conservation Commission and the St. Johns River Water Management District, in conjunction with the Florida Department of Environmental Protection, pertinent local governments, and the Harris Chain of Lakes Restoration Council; to review existing restoration proposals to determine which ones are most environmentally sound and economically feasible methods of improving the fish and wildlife habitat and natural systems of the Harris Chain of Lakes. Chapter 373.467 Florida Statutes is provided as Appendix 1 and Chapter 373.468 Florida Statutes is provided as Appendix 2 of this report.

Summary of 2009 Meetings and Presentations

During the period of November 2008 through October 2009 the Council convened eight (8) regular monthly meetings, convened one (1) Public Workshop for community input on priorities, expectations and ideas; and attended one (1) meeting of the SJRWMD Governing Board – Projects and Land Committee. Throughout the year, the Council was presented scientific information and data, which included water quality, aquatic habitat, fisheries status, and restorative measures as they relate to the Harris Chain of Lakes. The analytical data and scientific information reviewed addressed; water quality and toxicology, littoral vegetation and fish habitat, fish restocking to provide economic benefits to the region, fish harvests as they relate to water quality, lake access canal dredging, along with other lake management issues. The Council also reviewed previous, on-going, and future projects in the Upper Ocklawaha River Basin that relate to water quality and aquatic habitat. The information received was reviewed and discussed by the Council in detail, and was then used as the basis for developing recommendations of restorative measures and management practices for the Harris Chain of Lakes. Copies of the meeting minutes, including discussion of technical information received, and the presentations given for the period of November 2008 through October 2009, are provided as Appendix 3 of this report.

During the monthly meetings, the Council was provided technical information regarding impacts of historic and existing management practices on the Harris Chain of Lakes and the Upper Ocklawaha River Basin. Technical presentations were made and information was provided by several state and local agencies including the St. Johns River Water Management District, Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, Lake County Water Authority, University of Florida-

Institute of Food and Agricultural Sciences, and the Technical Advisory Group (TAG) to the Council. Below is a list of the technical presentations made to the Council during the 2009 reporting period:

- 1/9/09 Jim Stivender, Director of the Lake County Department of Public Works provided an overview of Lake County Stormwater Fees and Projects.
- 2/6/09 Council members attended the St. Johns River Water Management District Governing Board – Projects and Land Committee meeting. (Appendix x)
- 3/6/09 Eric Nagid, a Biologist with the FWCC gave a presentation on Water Level Fluctuation and Fish at Rodman Reservoir; and Hydrilla Management at Orange Lake and Lochloosa Lake. (Appendix x)
- 4/4/09 The Council held a public workshop to discuss lake restoration issues. (Appendix x)
- 6/5/09 David Fisk, Assistant Director of the St. Johns River Water Management District gave a presentation on the relationship with the Natural Resources Conservation Service pertaining to Lake Apopka and the North Shore Restoration Area restoration efforts. (Appendix x)

Bruce Jagers of the FWCC gave a presentation on the status of the Lowrie Brown restoration efforts within the Emerald Marsh. (Appendix x)

Robert Hendrick, CEO of Clean to Green, Inc. gave a presentation on Dredging Technologies for Lake Beauclair Dredging Project. (Appendix x)
- 9/11/09 Barron Moody, a Regional Fisheries Administrator with the FWCC gave a presentation on the Lake Trafford dredging project. (Appendix x)
- 10/9/09 David Fisk, Assistant Director of the St. Johns River Water Management District provided an update on the Upper Ocklawaha River Basin (UORB) Funding Initiative...

Additionally, the TAG convened a meeting to discuss various restoration technologies and projects on 8/24/09. A summary of the meeting and issues discussed is provided as Appendix x.

Throughout the year the TAG provided technical information, presentations, and regular updates to the Council in support of water quality and restorative issues being reviewed for the Harris Chain of Lakes. Copies of the presentations made before the Council are provided as appendices to this report as noted. All appendices and the complete report are provided digitally on the CD which accompanies this report and may also be accessed via the Council website at <http://harrischaincouncil.ifas.ufl.edu/>.

In 2009 the TAG Members include:

Barbara Bess	Ex-officio Member – Senior Environmental Consultant
Daniel E. Canfield Jr., Ph.D.	University of Florida-Institute of Food and Agricultural Sciences (Chairman of the TAG)
Christianne Ferraro	Florida Department of Environmental Protection
Walt Godwin	St. Johns River Water Management District
Bill Johnson	Florida Fish and Wildlife Conservation Commission
Peter Milam	U. S. Army Corps of Engineers
Michael J. Perry	Lake County Water Authority
Stephen Tonjes	Florida Department of Transportation

Beginning in January 2009, the St. Johns River Water Management District elected not to send their TAG representative to Council meetings, reported to be a result of budgetary constraints. The Council is disappointed with this decision because it has limited two-way communication regarding restoration activities of the District and potentially delays the Council in fulfillment of its duties.

In April 2009, the Council in order to expedite the Harris Chain of Lakes Restoration Program (Chapter 373.468 Florida Statutes) sponsored a Public Workshop hosted by the Florida LAKEWATCH program, which included a diverse group of citizens living along the Harris Chain of Lakes. The meeting was designed to assess citizen input of the current restoration programs and restoration projects being advanced by the Council.

After debating many of the issues previously discussed before the Council, the citizens also concluded that they believed new restoration strategies were needed for the Harris Chain of Lakes. The citizens recommended five approaches: 1) build artificial fish habitat that can assist with the restoration of the fisheries and aquatic plant habitat, 2) reconnect the marshes to the lakes as soon as possible, 3) continue the wild-adult bass stocking program, 4) support dredging of Lake Beauclair, and 5) initiate dredging of canals around other lakes for access at low water. These recommended approaches were put forth at the May 2009 meeting of the Council and adopted as guidelines for future restoration activities.

During the June 2009 meeting of the Council, David Fisk, Assistant Director of the St. Johns River Water Management District explained that the District had discussions with the Natural Resources Conservation Service and there was a written agreement in principle, to release the conservation easement and essentially the St. Johns River Water Management District will become the sole owner of the property at the north shore, on behalf of the public. Mr. Fisk also informed the Council that restoration activities at the Lake Apopka North Shore Restoration Area should begin to move along more quickly. Furthermore, he explained that once other environmental issues are resolved, there will be the potential to reconnect the marshes of the north shore to Lake Apopka. The Council awaits further information on the proposed remediation / reconnection plan for the North Shore Restoration Area, by the St. Johns River Water Management District.

At the September 2009 meeting, the Council heard a presentation by Barron Moody, a Regional Fisheries Administrator with the Florida Fish and Wildlife Conservation Commission on the Lake Trafford dredging project in the Florida Everglades. The Council then discussed the potential for dredging nutrient-rich, fluid sediments at different locations in Lake Apopka and depositing the sediments on portions of the former farmlands at the north shore area, in an effort to advance the reconnection of the lake to the north shore marshes. The Council will pursue discussions on limited dredging projects with the St. Johns River Water Management District.

During the October 2009 meeting...

Findings and Recommendations

In the 2008 Report to the Florida Legislature, the Council, after reviewing decades of scientific reports, concluded that the restoration of the entire Harris Chain of Lakes shall be delayed unless alternative restoration strategies are implemented under Legislative direction.

The Council was especially concerned with the restoration approaches being followed by the St. Johns River Water Management District because the approaches focused on phosphorus control and the Council has concluded that the phosphorus criterion of 55 parts per billion established by the Legislature (Chapter 373.461 Florida Statutes) was unobtainable for the long term.

After hearing presentations and receiving information from numerous scientific professionals, and holding numerous public meetings for the last eight years, the Council further concludes that the current overall existing restoration strategy for the Harris Chain of Lakes is not effective and that many individual restoration projects are not producing significant results. In some instances, incremental progress can be demonstrated but in the collective opinion of the Council, the timeframes that will be required to achieve "restoration" are unacceptably long and in the end will not represent a cost effective use of Florida tax dollars.

Throughout the course of the 2009 reporting period, the Council developed specific recommendations concerning issues associated with the restoration initiatives and lake management practices being used at the Harris Chain of Lakes. An evaluation of total phosphorus, total nitrogen, and chlorophyll concentrations at Lake Apopka as well as water clarity as measured by Secchi disc, demonstrated average annual nutrient and chlorophyll concentrations for the first six months of 2009 remained above the long-term averages established from 1978 to present, and that water clarity is below the long-term average. The Council, therefore, stands firmly behind the recommendations in its 2008 Report to the Legislature.

Because the Council strongly believes that restoration of the entire Harris Chain of Lakes shall be further delayed unless alternative restoration strategies are implemented under direction of the Florida Legislature, the 2009 report advances the initial aspects of the Harris Chain of Lakes Restoration Program (Chapter 373.468 Florida Statutes). The Council hereby

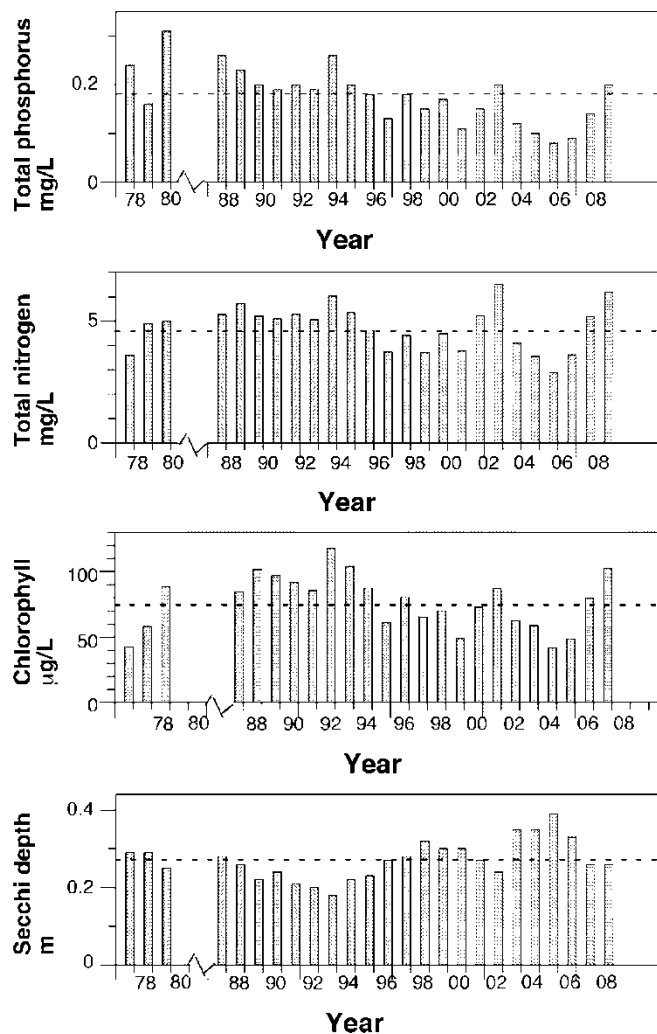
requests that legislators evaluate the cost and benefits of current restoration activities on the Upper Ocklawaha River Basin. Furthermore, the Council concludes the following:

- Restoration budgets are limited, thus constraining restoration efforts,
- Inefficient and ineffective projects should be suspended and the funds reallocated to more productive uses, and
- Long-term research focused on minimally effective restoration programs should be terminated and refocused on new initiatives with greater potential to achieve restoration in the next 20 years.

Council Recommendations

The Council has long recognized that many Harris Chain of Lake Restoration strategies have been linked to water quality at Lake Apopka. The following graph of annual averages provides, in part, the basis for the Council's decision to adopt new restoration strategies.

Lake Apopka annual averages



Reducing Phosphorus Inputs to the Lakes

The Council supports the efforts of the Lake County Water Authority to operate the Lake Beauclair Nutrient Reduction Facility, as an alternative strategy to reduce phosphorus concentrations in water released through the Apopka-Beauclair Canal to Lake Beauclair and the downstream lakes in the Harris Chain. Performance of the facility and impacts on downstream water quality will be evaluated during future meetings.

The Council presently supports the efforts of the Florida Department of Environmental Protection to improve water quality in the Harris Chain of Lakes by implementing the Total Maximum Daily Load (TMDL) program. The Council, however, is concerned about reports that the TMDLs being established are unobtainable and that Lake Harris as well as other lakes will not or cannot meet TMDL target concentrations in the foreseeable future. The Council, therefore, concludes it is prudent to seek and support other management strategies to restore the Harris Chain of Lakes in a timely manner.

Shoreline and Aquatic Habitat Restoration

The Council supports the proven efforts of the Florida Fish and Wildlife Conservation Commission, University of Florida Department of Fisheries, and Florida LAKEWATCH to establish near shore artificial habitat to create areas for spawning, fish cover and vegetation establishment resulting in improved sport fishing opportunities, which can be accessed from shorelines, public docks, and/or fishing boats. Improved fishing is an economic boost for communities and the emphasis on shoreline and dock habitat enhancement increases the opportunities for youth education programs such as the LAKEWATCH Fishing for Success, and those of the 4-H Club, Scout groups, and others to utilize the lakes in positive ways.

The Council is partnering with the Florida Fish and Wildlife Conservation Commission, proposes to implement a major fish/plant restoration program using limestone, concrete, or fallen trees to provide artificial fish habitat and barriers for aquatic plant protection. To quickly enhance the restoration of the sport fishery and the establishment of native water lilies (*Nuphar lutea*), **the Council requests that the Florida Legislature reallocate state and federal environmental trust funds to provide \$250,000 per year for five years**, to put in place substantial structural-complexes. Additionally, the Council has committed the balance of its existing funds received through Legislative appropriations to this effort. (Appendix x)

The first effort shall include the establishment of rock bottom near public fishing piers to enhance bank fishing in the Harris Chain of Lakes. After establishing the public fishing areas, rock reefs shall be established to enhance the survival of young-of-the-year fish and provide cover for adult fish that currently inhabit open-water. These fish are unavailable to many anglers and rock reefs, by breaking up wave action, will also aid the establishment of new aquatic plant beds. This approach will reinvigorate near-shore (littoral zone) aquatic re-vegetation efforts on the Harris Chain of Lakes.

Lake Apopka and North Shore Restoration

Based on review of available data, the Council recommends suspension of most of the current restoration strategy for Lake Apopka and the former farmland on the north shore of Lake Apopka, until further evaluation of their effectiveness can be completed. Restoration projects at Lake Apopka have been ongoing for over 20 years, beginning with the purchase of the farmland and while there has been some intermittent improvement in water clarity, recent data indicates that minimal if any improvements in water quality or sport fishing opportunities at Lake Apopka. The prospect of success in the next few decades even by the lead State Agency forecast is not much better. Government agencies should be looking for ways to reduce spending, especially where results have been less than desirable. The Council commends some aspects of the work of the St. John's River Water Management District to date. However, the Council also believes it is time to "re-think" the current restoration approach and strive to develop a comprehensive restoration plan that can return Lake Apopka to a viable recreational and economic resource in the next 20 years.

North Shore Restoration

The primary objective behind purchasing the farms was to eliminate the discharge of water containing excess nutrients and sediments into the lake, both of which continue today. Additionally, there has been an ongoing controversy about proposed removal of water from Lake Apopka to supplement municipal irrigation. The Council recommends that no application for permits to withdraw water from any lakes in the Harris Chain should be considered until such time that the minimum flows and levels have been established for the lakes.

The Council recommends the creation of a legislative appointed sub-committee which include members of the TAG to the Council and former landowners at Zellwood to develop a plan to create a reservoir on the north shore, which can be a resource for local municipalities and provide an alternative to the detrimental discharge of nutrient-rich waters into Lake Apopka. The Committee's plan would be to improve water storage capacity, along with fish and wildlife habitat to potentially lower the management costs than currently being expended.

Lake Apopka Restoration

The restoration of Lake Apopka is paramount to the restoration of downstream lakes in the Harris Chain. The objectives that need to be met for Lake Apopka to again become an asset to the citizens whose taxes fund restoration include:

1. Stabilization or removal of suspended sediments and solids that hinder water clarity;
2. Reducing the external nutrient load discharged to the lake from the former farmlands of the north shore;
3. Removal or reducing the internal nutrient load, and;

4. Creation of habitat in the form of aquatic vegetation and increased fish populations.

As discussed in the March 2009 Council meeting, the successful management strategy at Orange Lake provides a relevant local example of the benefits of accomplishing more by doing less. (see appendix for March 6) Allowing hydrilla to grow in every lake might not be a good policy, but in the case of Lake Apopka, it is a low management biological restoration tool that should be seriously considered. Hydrilla provides desirable habitat for sport fish and when allowed to grow, will also improve water clarity and thereby increase the opportunity for other vegetation to become established. Based on the current level of aquatic plant coverage at Lake Apopka, even a monoculture of an invasive aquatic plant would be a positive step. The lake management project at Orange Lake indicates the potential for a mosaic of aquatic plants becoming established again. In the event hydrilla flourishes and takes over a greater area of the lake than anticipated (some estimates are at 30% or less) the goal of cleaner water and improved fishing would be met at a fraction of the current restoration expenditures. Cleaner water will flow through downstream through the Apopka-Beauclair Canal downstream, which would provide a control mechanism for limiting and treating the spread of hydrilla. The Council suggests the use and management of hydrilla be evaluated as an alternative, cost effective restoration strategy for Lake Apopka that will provide faster results and make funds for other restoration activities.

Reconnecting Marshes to the Lakes

The Council supports the efforts of the St. Johns River Water Management District and the Florida Fish and Wildlife Conservation Commission to reconnect Lake Griffin to its adjoining marshes. The Council urges the agencies to identify issues that are delaying the complete reconnection and to expedite the process.

The Council strongly supports the reconnection of the former north shore farmlands to Lake Apopka, as originally proposed by the St. Johns River Water Management District, to act as a “kidney” to naturally filter the waters and provide improved fish and wildlife habitat. Reconnection requires increasing the elevation of the former farmlands, so they are not permanently flooded when the existing dikes are removed. The most readily available soils for elevating the marshes are the bottom sediments of Lake Apopka.

The Council recognizes the role bottom sediments play in influencing water quality and fish/plant habitat in Lake Apopka. The Council, therefore, recommends that the Florida Fish and Wildlife Conservation Commission be funded to conduct a research/demonstration project using dredging techniques that can determine how much and what type of sediment can be removed from a single site in Lake Apopka, and how land elevations in the former farmlands could be elevated with the construction of wetland islands, similar to those the Commission has constructed at other lakes. The project would also provide the opportunity to determine which materials can be sold to offset dredging costs. **The estimated cost for a research/demonstration project is \$1,000,000 for the area near Magnolia Park, in Orange County.**

Sport Fish Restocking

The Council and the citizens attending the April 2009 Public Workshop strongly support the adult, largemouth bass stocking program conducted by the University of Florida and Florida LAKEWATCH, as vital to the Harris Chain of Lakes Restoration Program (Chapter 373.468 Florida Statutes), and strongly supports continued funding of the program.

The Council also supports the efforts of the Florida Fish and Wildlife Conservation Commission to begin a sunshine bass / hybrid striped bass stocking program in Lake Apopka. Utilizing fingerling bass developed at the Florida Bass Conservation Center at Richloam, the program is designed to balance the predator – prey relationship, in an effort to reduce the gizzard shad populations and nutrient recycling in the lake. This research / demonstration project predicts the sunshine bass will outgrow shad in their first year and will be well suited to graze on the shad fry in the Spring.

The Council continues to support the ongoing research and stocking programs of the Florida Fish and Wildlife Conservation Commission, University of Florida Department of Fisheries, and Florida LAKEWATCH as ways to improve both water quality, and provide recreational and economic opportunities associated with sport fishing. A thesis written by a University of Florida graduate student (K.W. Larson, 2009) on the economic activity at Lake Griffin as a result of the wild-adult bass stocking program, produced angler expenditure estimates in Lake County as high as \$6 million per year, as a result of the bass stocking program. A copy of that thesis is provided as Appendix x. This is an important economic stimulus at a time which is very beneficial to Lake County and its residents.

The Council recognizes that restoration of the Harris Chain of Lakes will take decades and believes funding the transfer of fish from private waters to the Harris Chain of Lakes is, until habitat can be restored, the most cost-effective measure to maintain the economic vitality of the largemouth bass fisheries in the lakes. Since 2004, the Legislative appropriations for support of sport fish restocking in the Harris Chain of Lakes have provided a positive economic benefit to Lake County (non-local anglers). The stocking program has also enhanced the total number of adult fish in the stocked lakes, where the ability of the adult bass to spawn is an important link to the recovery of the sport fish populations in the Harris Chain of Lakes. The stocking also assists in restoring the balance between predator and prey fish. **The Council, therefore, recommends an annual appropriation of \$150,000 for the continuation of the restocking program on the Harris Chain of Lakes being conducted through the University of Florida and Florida LAKEWATCH.**

Gizzard Shad Harvesting

Gizzard shad have been identified as an abundant species of fish that affects water quality within key lakes of the Harris Chain. The potential is that rough fish harvest would provide phosphorus reduction by removal of the fish. The primary lake management issue with gizzard shad is that they are benthivorous or bottom feeders and consume sediments in search of other food. The sediments contain large quantities of phosphorus and other nutrients that have settled to the bottom, which are then resuspended or stirred-up by foraging.

The mass harvest of gizzard shad to remove phosphorus is a controversial restoration strategy employed by the St. Johns River Water Management District. After multiple years of evaluation, studies have concluded that the current level of gizzard shad harvest is not sufficient to impact phosphorus concentrations in Lake Dora or the other lakes in the Harris Chain. It has been determined that increasing the gizzard shad harvesting efforts would adversely affect populations of black crappie (specks), which is one of the major sport fish species in the Harris Chain of Lakes. Additionally, the Florida Fish and Wildlife Commission has estimated the gizzard shad harvesting program in Lake Apopka will remove approximately 10,000 of the sunshine bass stocked in the lake as a natural predator to the shad.

The Council stands firmly behind its recommendations in the 2009 Report to the Legislature and continues to conclude that commercial harvest of gizzard shad will not significantly improve water quality unless netting is conducted at a level that would be extremely detrimental to sport fish populations, which is not acceptable. The Council supports efforts by other agencies including the Florida Fish and Wildlife Conservation Commission, to increase sport fish populations, which serve as predators of gizzard shad.

Dredging as a Tool for Restoration

The Council continues to support access canal dredging as a viable lake management/restoration tool on the Harris Chain of Lakes. With the successful completion of canal dredging at Lake Griffin, the Council will continue to review canal access concerns at other lakes to determine if and where additional access dredging is needed to improve navigability during periods of lowered water levels; as maintaining navigation is critical to foster public support for enhanced lake level fluctuations. Through Legislative appropriations, the Council has provided \$2,350,000 in funding for support of the Lake Griffin access canal dredging project.

The Council, as part of the Harris Chain of Lakes Restoration Program (Chapter 373.468 Florida Statutes), recommends funding be provided to the Florida Fish and Wildlife Conservation Commission to conduct research/demonstration dredging projects that utilize systems such as the Menzi Muck remover or the Genesis system that do not require massive amounts of land for sediment disposal. The focus should be on access canals because newly dredged canals are providing fish spawning habitat in the Harris Chain of Lakes. **An initial funding of \$1,000,000 would provide a viable test of the main dredging processes investigated by the Council.**

The Council further recommends that state and local agencies evaluate the dredging of a sump area in Lake Apopka near the entrance of the Apopka-Beauclair Canal in an effort to reduce the movement of fluid sediments downstream through the canal during periods of increased flow due to storm events.

Lake Beauclair Dredging

The Council supports the efforts of the Lake County Water Authority, Florida Fish and Wildlife Conservation Commission, and St. Johns River Water Management on the planned project to dredge approximately 1.5 million cubic yards of muck from Lake Beauclair and the Apopka-Beauclair Canal. A significant amount of this material originated from Lake Apopka during the 2004 hurricane season and has setback the restoration of fish and wildlife habitat in Lake Beauclair. The estimated cost of this project is approximately \$10,000,000. **The Council recommends a Legislative appropriation of \$5,000,000 to provide a 50/50 cost share with the Lake County Water Authority for this important project.**

Mechanical Harvesting of Nuisance Aquatic Vegetation

In January 2007, the Council completed the purchase of a mechanical harvester utilizing \$25,000 in Legislative appropriations. The harvester is maintained and operated by Florida LAKEWATCH volunteers, and used to remove near-shore, invasive aquatic vegetation at the request of property owners and homeowner associations throughout Lake County. This program has been very successful at maintaining waterways and based on the high demand for its services, has proven to be very popular with the citizens of the County. This method of aquatic weed control not only removes nutrients from the water but also maintains boating access for local residents. Herbicide applications while lower in application costs, introduce nutrients and particulate matter into the water as targeted plants decay. The Council supports the efforts of Florida LAKEWATCH volunteers and continued use of the mechanical harvester to remove nuisance aquatic vegetation when and where it is economically feasible.

Summary

Recognizing that there is more than one viewpoint within the scientific community regarding restoration strategies, the Council recommends the Florida Legislature form a broad group of stakeholders and members of the scientific community to review both existing strategies as well as alternatives to recommend.

In summary, this Council further recommends that legislators take an active role in reviewing current restoration efforts and guiding the process towards more effective and efficient use of tax dollars focused on the timely restoration of our surface water bodies to viable recreational resources. Timely restoration of the Harris Chain of Lakes will benefit Florida's economy, residents, businesses and visitors.