

Lake of The Woods 2009-2010

On **28 October 2009**, Seminole County (SC) Lake Management Program staff Gloria Eby, Dean G Barber, and Thomas Calhoun surveyed the aquatic plants in Lake of the Woods. Hydrilla was obtained on several bottom grabs, mostly in the southern end of the lake, to a depth of 5 feet. All the hydrilla was small healthy plants, usually 4-6 short strands from one node. Fewer of these plants had been observed in previous months, but with them occurring more frequently it is recommended that the lake stocked with ½ a triploid grass carp fish per lake acre. Other submersed aquatic vegetation (SAV) included: coontail, road grass and eelgrass. Few water hyacinths were observed. With the SC contractor spraying the hyacinth up in the northern creek, hopefully this source can be eliminated. It is also very helpful if anyone sees a water hyacinth, please remove it from the waterbody. This will help insure that they will be eliminated. Also with the contractor effectively treating the invasive waterfront aquatic plant torpedo grass, and the resident and volunteer plantings (11 July 2009 & 14 October 2009), the native plants will increase competing with torpedo grass for space.

Secchi (water clarity) reading was 3 feet in a depth of 7.5 feet. Water level was 74.68 feet above sea level.

On **11 November 2009**, Dean G Barber (Seminole County [SC] Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake of the Woods. The invasive exotic Hydrilla (*Hydrilla verticillata*) was found up to 8' with new plant growth. Other SAV present in the samples included southern naiad (*Najas guadalupensis*) and coontail (*Ceratophyllum demersum*) that where both found up to 6ft. Eelgrass (*Vallisneria americana*) was observed to a depth of 5 ft. Hopefully, other native SAV like) road grass (*Eleocharis baldwinii*) and stonewort (*Nitella spp.*) will re-establish to impede hydrilla from expanding significantly in the future. The exotic floating aquatic plant, water hyacinth (*Eichhornia crassipes*) and the exotic emergent aquatic plant torpedo grass (*Panicum repens*) are continuing to be reduced by successive herbicide treatments. The SC aquatic herbicide contractor is now treating the hyacinths on the north side of the Lake of the Woods condo's bridge; hopefully this will eliminate the source of this invasive plant. The lily, spatterdock (*Nuphar luteum*), adjacent to the condo's, could be treated in deeper water (greater than 4 ft in depth) to improve circulation in the northern end of the lake. These lilies extend out to a depth of 7 ft, averaging 6 ft.

The 11 July 2009 Shoreline Restoration Workshop planting looked good and most populations have expanded to the point they look like natural plantings.

On **22 December 2009**, Seminole County Lake Management Program staff Dean G Barber and Thomas Calhoun surveyed the aquatic plants in Lake of the Woods. The invasive exotic hydrilla was obtained on 8 bottom grabs (35% of all bottom grabs) to a depth of 6 feet. Most plants were old fragments with few new growth observed on plant. These plants were seen from the western side thru the southern to eastern side of the lake. Other SAV present included: coontail, road grass, southern naiad and eelgrass, all native aquatic plants. Eelgrass was observed to a depth of 4-5 feet and was the dominant SAV followed by southern naiad to a depth of 5 feet. Only a few exotic floating aquatic plants, water hyacinth, were observed. Hopefully with this plant being treated to its source, it will soon be eliminated. The exotic emergent aquatic plant torpedo grass has continued to be reduced by successive herbicide treatments. With the continued success of

the 14 October 2009 shoreline plantings, these native emergent aquatic plant will help prevent the torpedo grass from returning.

Secchi (water clarity) was 3.3 feet in a depth of 12.6 feet. Previous reading was 3.1 feet. Water elevation reading was 74.76 feet compared to 74.57 feet in 19 November 2009.

On **26 January 2010**, Dean G Barber (Seminole County [SC] Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake of the Woods. The invasive exotic Hydrilla (*Hydrilla verticillata*) was found up to 5' and is now in a winter dormant state. Eelgrass (*Vallisneria americana*) was observed to a depth of 6 ft and is competing well with the Hydrilla. Other SAV present in the samples include; southern naiad southern niad (*Najas guadalupensis*), coontail (*Ceratophyllum demersum*) and stonewort (Nitella spp.). Hopefully these natives will continue to expand and impede hydrilla from expanding significantly in the future. The exotic floating aquatic plant, water hyacinth (*Eichhornia crassipes*) has been successively treated and only three plants were found during the survey. Also the exotic emergent aquatic plant torpedo grass (*Panicum repens*) has continued to be reduced by successive herbicide treatments. The lily, spatterdock (*Nuphar luteum*), adjacent to the condo's, have been impacted by a leaf eating beetle. These lilies extend out to a depth of 7 ft, averaging 6 ft. At the time of inspection Secchi (water clarity) was 3.7 feet in a depth of 14.3 feet. Water elevation reading was 74.79 feet.

The October 14, 2009 Shoreline Restoration Workshop planting looked good with some winter die back from the recent cold temperatures but these are expected to recover and continue to expand with warmer weather. Also Triploid grass carp stocking took place on December 12.

On **25 February 2010**, Dean G Barber (Seminole County [SC] Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake of the Woods. The invasive exotic Hydrilla (*Hydrilla verticillata*) was found on 7 of 19 grabs up to 6 ft deep. Although the hydrilla found was single strand and stressed this is an increase in the amount found over previous months. Eelgrass (*Vallisneria americana*) the dominant SAV in the lake was observed to a depth of 6 ft and is competing well with the Hydrilla in the shallower water. The exotic floating aquatic plant, water hyacinth (*Eichhornia crassipes*) has been successively treated and only a few plants were found during the survey. Also the exotic emergent aquatic plant torpedo grass (*Panicum repens*) has continued to be reduced by successive herbicide treatments. At the time of inspection Secchi (water clarity) was 3.8 feet in a depth of 12.6 feet. Water elevation reading was 74.81 feet.

The October 14, 2009 Shoreline Restoration Workshop planting looked good with some winter die back from the recent cold temperatures but these are expected to recover and continue to expand with warmer weather. Also Triploid grass carp stocking took place on December 12.

On **16 March 2010**, Seminole County Lake Management Program (SCLMP) personnel Gloria Eby and Dean G Barber (Consultant) surveyed the aquatic plants in **Lake of the Woods**. Hydrilla was found throughout the lake to a depth of 5 feet, but populations were very small and plants were less than 8 inches in length, still showing winter stress. The amount observed was similar to that reported last month. Eelgrass continues to be the dominant submersed aquatic

vegetation (SAV) in the lake, observed to a depth of 6 ft, with other native SAV like coontail and southern naiad, strongly competing with the hydrilla for space. The exotic floating aquatic plant, water hyacinths were observed, but only a few plants. It would be possible to eliminate this invasive exotic if residents would hand remove any that are observed. Torpedo grass, the dominant aquatic plant adjacent to the shore, is competing for space with the aquatic plants that have been established around the lake during the planting workdays. All of these natives, with maidencane grass, are well established and expanding, especially as we are entering spring. SCLMP appreciates all of the lakefront owners that have participated in these workshops to improve your lake. Secchi (water clarity) was 3.2 feet in a depth of 4.8 feet compared to 3.8 feet last month. One grass carp fish was seen.

Attached is our new guide for lakefront homeowners! In it you will find information from on how you can protect your lake (pg2-3) to plant identification to handy contacts and resources for you (pg19). I included 2 graphs below which indicates nutrient levels (measured by the Trophic State Index [TSI] and/or Total Phosphorous [TP]) for your lake. A score of 60 or above is considered impaired (or polluted) lake. There is a significant loading of TP attributed to the 'unmanned' storm event in may that correlates to the reduction in clarity (Secchi reading) and hydrilla population crash. Reduction of TP sources (personal pollution, run-off, landscaping practices, shoreline erosion) can help reduce phosphorous in your lake that is abundantly available creating algal blooms.

On **15 April 2010**, Seminole County Lake Management Program (SCLMP) personnel Gloria Eby and Dean G Barber (Consultant) and Thomas Calhoun (Assistant Scientist) surveyed the aquatic plants in **Lake of the Woods** after a lake restoration volunteer event planting aquatic plants in over 8 lakefronts. As during the previous survey, 16 March 2010, hydrilla was found throughout the lake to a depth of 5 feet, populations were sparse on the west side of the lake, but more abundant on the east side. However, hydrilla was frequently observed in shallow water (less than a foot in depth), adjacent to the shore throughout the lake. This abundance of hydrilla in the shallow water has not been previously documented and is a cause for concern. Native submersed aquatic vegetation (SAV) observed included: coontail, muskgrass, southern naiad and eelgrass, were all present in deeper water, coontail to 5 feet and eelgrass to 4 feet, and will compete with hydrilla for space in these depths. However, there is less abundance of these species in shallow water to compete with the hydrilla.

During the planting event, several water hyacinths were observed within other aquatic plant locations. With the SC contractor program, there is an excellent possibility of completely removing water hyacinths from this lake, however, it is important that any lake user remove any water hyacinth that they observe. Secchi (water clarity) was 3.7 feet in a depth of 11 feet, compared to 3.2 feet last month. The lake elevation was 74.81 feet above sea level.

On **26 May 2010**, Seminole County Lake Management Program (SCLMP) personnel Gloria Eby, Marianne Pluchino, Thomas Calhoun and Dean G Barber and personnel from DEP surveyed the aquatic plants in **Lake of the Woods** and conducted an Lake Vegetation Index (LVI). The LVI was created by the Florida Department of Environmental Protection as a rapid screening tool (bioassessment) for ecological condition; it determines how closely a lake's flora (aquatic plants) resembles that of an undisturbed lake.

As in the last two plant surveys 15 April and 16 March 2010, healthy hydrilla was found over most of the lake. Previously it was noted to a depth of 5 feet, during this survey it was

documented to a depth of 8.5 feet with some plant strands over 4 foot in length. In the 4 of 12 LVI sectors observed, hydrilla was the dominant plant in one and co-dominant with eelgrass in another. Native submersed aquatic vegetation (SAV) observed included road grass, southern naiad to 4 feet, stonewort to 8 feet, and eelgrass to 6 feet. The fact that all these native SAV are distributed throughout a depth range from inshore to offshore provides competition for space with hydrilla, making it more difficult for it to establish throughout this range. Torpedo grass although not dominant in any of the 4 LVI sectors, continues to be an abundant emergent aquatic plant, however, spatterdock lily was considered dominant in one sector and co-dominant in two. Other native emergent plants that are continuing to expand include maidencane grass, duck potato and pickerelweed. With the spray program, these native emergent aquatic plants and resident's removing torpedo grass, these factors will impede torpedo grass. Also doing well are canna and iris. Secchi (water clarity) was 3.8 feet in a depth of 12.9 feet, compared to 3.7 feet last month.

Also observed on a routine basis; grass clippings being blown *directly* into lake. During each inspection we are finding this activity taking place. Be sure to educate your hired services on how to protect **your** lake. Simple steps such as mowing in a direction away from the lake for the first several strips only can reduce this major phosphorus loading source for the lake taking only minutes to do.

On **7 July 2010**, Seminole County Lake Management Program (SCLMP) personnel Gloria Eby, and Thomas Calhoun surveyed the aquatic plants in **Lake of the Woods** and with Dean G Barber conducted a Lake Vegetation Index (LVI) on **21 July 2010**. Submersed aquatic vegetation (SAV) observed included: coontail to a depth of 7 feet, road grass to 7 feet, the invasive exotic hydrilla to 7 feet, southern naiad to 7 feet, stonewort to 4.5 feet, and eelgrass to 6 feet. There is a good distribution of native SAV throughout a depth range from inshore to offshore providing competition for space with hydrilla. Additionally the hydrilla populations were reduced from that observed during the previous three monthly (March, April & May). Hydrilla plants were small (2-4 inches in length), stressed, with no new growth, compared to the May survey where this same plant was healthy with strands over 4 foot in length. Also during this LVI, eelgrass was the dominant aquatic plant in 2 of the 4 sectors surveyed. With all these native plant competitions, recent herbicide treatment and additional stocking of the triploid grass carp, the hydrilla is being impacted. The dominant aquatic plant in the other 2 LVI sectors was the native lily, spatterdock, which is present throughout the lake to a depth of 6-7 feet. Torpedo grass, although not dominant in any of the 4 LVI sectors, continues to be an abundant emergent aquatic plant adjacent to the shore. However, with the expansion of the aquatic plants (pickerelweed, duck potato, canna and iris) from the lake planting events, subsequent expansion of other native emergent aquatic plants including maidencane grass, the monthly herbicide treatment of the torpedo grass, and removal of cattails, torpedo grass is declining. Few water hyacinths were seen. Secchi (water clarity) was 5.4 feet in a depth of 12.2 feet (7/7/10) and 3.6 feet (7/21/10) compared to previous 3.8 feet (5/26/10).

On **27 August 2010**, Seminole County Lake Management Program (SCLMP) personnel Gloria Eby, and Thomas Calhoun surveyed the aquatic plants in **Lake of the Woods**. Submersed aquatic vegetation (SAV) observed included: coontail (*Ceratophyllum demersum*) to a depth of 6.5 feet, road grass (*Eleocharis baldwinii*) to 6.5 feet, the invasive exotic hydrilla (*Hydrilla*

verticillata) to 7 feet, southern naiad (*Najas Gadalupeensis*) to 6.5 feet and eelgrass (*Vallisneria americana*) to 6 feet. There is a good distribution of native SAV throughout a depth range from inshore to offshore providing competition for space with hydrilla. Additionally the hydrilla populations were reduced in the non treated areas from the stocked triploid (sterile) grass carp. Also there has been an expansion of southern naiad inshore and abundant to 5 feet. With all these native plant competitions, recent herbicide treatment and additional stocking of the triploid grass carp; the hydrilla is continuing to be impacted. Torpedo grass continues to be the most abundant emergent aquatic plant adjacent to the shore. However, with the expansion of the aquatic plants (pickerelweed, duck potato, canna and iris) from the lake planting events, subsequent expansion of other native emergent aquatic plants including maidencane grass, the monthly herbicide treatment of the torpedo grass, and removal of cattails, torpedo grass is declining. It has been recommended to the Seminole County herbicide contractors that the lilies and taro in the north east corner of the lake be reduced. Few water hyacinths were seen by the outflow canal. Secchi (water clarity) was 4 feet in a depth of 11.9 feet during the inspection compared to the previous reading of 5.4 feet (7/7/2010).

On **21 September 2010**, Seminole County Lake Management Program (SCLMP) personnel Thomas Calhoun, and Dean G Barber surveyed the aquatic plants in **Lake of the Woods**. Submersed aquatic vegetation (SAV) observed included: coontail (*Ceratophyllum demersum*) to a depth of 6 feet, road grass (*Eleocharis baldwinii*) to 6 feet, the invasive exotic hydrilla (*Hydrilla verticillata*) to 5 feet, southern naiad (*Najas guadalupensis*) to 5 feet and eelgrass (*Vallisneria americana*) to 6 feet.

Eelgrass was the dominant SAV observed in thick populations coming to the surface in 4 feet water depth, then decreasing and not reaching the surface from 4 ft to 6 feet water depth. Although present throughout the lake, it is not blocking navigation and boating access. Next most abundant SAV was southern naiad. Both these plants are healthy and expanding from previous survey observations. The invasive exotic SAV, hydrilla, observations were reduce from previous surveys and was short in length (4-8 inches long), not healthy, stressed, with few new growth tips. As intended in SCLMP lake management plan, hydrilla continues to be stressed by the previous herbicide treatment, present stocking of triploid grass carp fish and composition with the native aquatic plants, especially the eelgrass and southern naiad.

With the treatment of the torpedo grass by SCLMP contractor and the expansion of native aquatic plants, especially pickerelweed, duck potato and canna (mostly from lake planting events), torpedo grass is no longer the most abundant emergent aquatic plant, having been replaced by the planted vegetation. Continued SCLMP herbicide treatments, plus shoreline management by residence will keep the torpedo grass at bay.

Some large water hyacinth plants (about 15) were observed NW of the outflow canal. Secchi (water clarity) was 4 feet in a depth of 10.8 feet during the inspection compared to the previous reading of 4 feet (on 8/27/2010).