

**On 25 September 2009**, Dean G Barber (Seminole County [SC] Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake of the Woods. Of 12 bottom grabs sampling for submersed aquatic vegetation (SAV) only 1 sample had hydrilla (*Hydrilla verticillata*). Other SAV present in the samples included road grass (*Eleocharis baldwinii*) and eelgrass (*Vallisneria americana*). Eelgrass was observed to a depth of 5 ft. Hopefully, other native SAV like coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*) 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 18 August 2009**, Gloria Eby (Seminole County [SC] Senior Environmental Scientist), and Dean G Barber (SC Consultant) surveyed the aquatic plants in Lake of the Woods. The only submersed aquatic vegetation (SAV) was eelgrass, (*Vallisneria americana*) observed to a depth of 5.7 feet. Previous surveys southern naiad (*Najas guadalupensis*) was the dominate SAV to a depth of 8.5 feet, followed by Hydrilla (*Hydrilla verticillata*). Neither of these species were observed, having been significantly reduced by an April 2009 treatment of 1 acre of each plant. The exotic floating aquatic plant, water hyacinth (*Eichhornia crassipes*) and the exotic emergent aquatic plant torpedo grass (*Panicum repens*) has been reduced by successive herbicide treatments, however, the northern canal, possible source of the hyacinth, the hyacinths need to be treated. Several other native emergent plant populations appear to be very healthy and expanding, especially into the impacted torpedo grass sites. These include: spatterdock (*Nuphar luteum*), maidencane (*Panicum hemitomon*), pickerelweed (*Pontederia cordata*) and duck potato (*Sagittaria lancifolia*).

The 11 July 2009 Shoreline Restoration Workshop planting looked good and most surviving populations were expanding. Some sites vegetated plants had been uprooted either because of the difficult substrate they were planted in or wave action.

No grass carp were seen even though 75 were stocked in July. Secchi reading (water clarity) was 3.5 feet in a depth of 10.7 feet. The December 2008 reading was 6.9 feet, with the average from 1993 of 3.3 feet.

**On 23 July 2009**, Gloria Eby (Seminole County [SC] Senior Environmental Scientist), Dean G Barber (SC Consultant) and Thomas Calhoun (SC Assistant Biologist) surveyed the aquatic plants in Lake of the Woods. The dominate submersed aquatic vegetation (SAV) was eelgrass, (*Vallisneria americana*) observed to a depth of 4.0 feet. No southern naiad (*Najas guadalupensis*) was observed and little coontail (*Ceratophyllum demersum*) and Hydrilla (*Hydrilla verticillata*) was seen. Before the April 2009 treatments that were focused on

reducing the exotic hydrilla and native southern naiad, both these species were the dominate SAV in the lake. With these plants at or just below the surface, they were impeding navigation over 40% of the lake. The April 2009 treatment was not extensive enough to have the impact that was observed. There is no clear answer for this apparent change in these two species. Possibilities are decrease light penetration (turbidity), impact from algae, large apple snail population, or herbicide treatments or a combination of several of these.

The exotic floating aquatic plant, water hyacinth (*Eichhornia crassipes*), about 0.4 acres and the exotic emergent aquatic plant torpedo grass (*Panicum repens*) continue to be impacted by successive herbicide treatments. The 11 July 2009 shoreline restoration shows good results for most sites. However, several planted sites had uprooted plants from wave action.

Secchi (water clarity) was 3.5 feet in a depth of 14 feet. Water gauge reading was 74.84 feet.

**7 July 2009 Note:** Please join us this Saturday starting at 9am for a Shoreline Restoration Workshop. We will be meeting at the Wellington HOA boat ramp (1308 Wellington Terr.) for replanting of native aquatic plants in Lake of the Woods. We will be bringing in plant material and we are expecting a record number of outside community volunteers to assist Lake of the Woods residents in enhancing their lake. This event is from 9 to 2pm so bring some hand shovels and your gardening attire. Since parking may be hectic, come by boat to the Wellington boat ramp located on northeast side of lake, again meeting kick-off is at 9am.

This event is to promote a beneficial native shoreline that assists in nutrient uptake (from runoff) and erosion in some areas. With assistance from the Lake of the Woods liaisons, we have selected several locations around the lake that has previously had torpedo grass and has been impacted/treated with the monthly contracted services. These areas are ready for installation of native aquatic plants.

### **General Lake of the Woods Updates:**

Lake of the Woods has been receiving a significant amount of rainfall/ runoff that is impacting the clarity of the lake. We are monitoring these changes and adjusting treatments accordingly.

The initial treatment (in April) of southern naiad-1 acre in the south end- and hydrilla- 1 acre on the west shore - has responded very well. In addition, a 4 acre treatment plot for hydrilla was treated in May for the east shore. Results of this treatment have responded well keeping native, southern naiad in the deeper portion of the lake reducing hydrilla in the inshore area. Due to the increase in rainfall/runoff no further submersed aquatic treatments are scheduled at this time and will resume once observations indicate otherwise.

Torpedo grass and Hyacinth has been greatly reduced around the lake. Many of you have raked treated hyacinth from out of the lake- kudos to you as this has reduced nutrient loading to the lake as well. Only a small area of hyacinth was reported in the north section which has since been treated. Hyacinth treatments are progressing towards an "as needed" basis to keep this exotic aquatic plant at bay.

The grass carp fish will be delivered by next week. 75 fish will be stocked which is a rate of 1.5 fish per acre (ultra conservative rate). Keeping with the same concept as with herbicides, this approach is intended to maintain balance within Lake of the Woods.

**April 2009 Note:** As some of you know, we have been busy working on test treatment plots for Lake of the Woods- treating a 1 acre plot of southern naiad in the south portion and a 1 acre plot of hydrilla on the west portion of the lake. Some of those in the treated area have notice a significant decrease of the southern naiad in the south plot as well as the hydrilla in the west plot. We are continuing to monitor the results and formulate the best treatment plan based upon these results.

As is, the southern naiad in the treatment plot is reduced off the surface acting as low growing plant making it more difficult for hydrilla to establish as the dominant plant in this area...what we wanted!

Next step is to target more of the hydrilla reducing the biomass of this plant as it has rapidly grown and established around the lake, from 4 acres to 8 acres. Within the next several weeks, a larger scale hydrilla treatment (~4 acres) will be taking place. We will advise in advance of this date as there will be a 14 day fish consumption advisory associated with the treatment.

The first monthly treatment took place this week in which hyacinth, sedge and targeted torpedo grass were treated. These species should continue to diminish as the treatments progress.

#### **Grass Carp News:**

We have the grass carp barrier construction in the works. Within the next several weeks this should be completed. After which we will request for grass carp fish (conservative rates) to assist in the reduction of hydrilla over time (integrated management plan: use of chemical and biological controls).

#### **Eelgrass:**

We have received several questions as to if eelgrass will be included in the treatments. Eelgrass or Tape grass (*Vallisneria americana*) is a beneficial native plant that exists in Lake of the Woods in the inshore area to ~5ft water depth. Because eelgrass is a native plant, this plays a vital role in the health of your lake. Eelgrass will also assist in competing for space with hydrilla making it more difficult for hydrilla to establish. Our aquatic plant permit issued by the State-Florida Fish and Wildlife Conservation Commission (FWC), does not permit us to treat the eelgrass.

We continue to maintain, as during our meetings, that the treatments must progress in a step-wise manner observing the effects of the treatment and adjusting as needed.

#### **Lake of the Woods**

**14 Jan 2009**

**G. Eby, D.G. Barber, R. Hamm, A. Giannotti, T. Hayes, D. Bergeson, two other lake reps**

#### **Survey Summary:**

Southern naiad was observed in the inshore waters to 8.5' and was actively competing with Hydrilla. Monocultures of Hydrilla exist at all of the outfalls. Significant water hyacinths were noted on the northern and southern ends of the lake. Eelgrass is present and appears to be expanding in the southern portion of the lake. Filamentous algae have developed on the top of the naiad/Hydrilla.

**Species present:**

Alligator weed	Para grass	Coontail
Wild taro	Umbrella flat sedge	Water hyacinth
Eleocharis (sub.)	Filamentous algae	Hydrocotyle
Primrose willow	Spatterdock	Maidencane
Torpedo grass	Pickerelweed	Arrowhead
Willow	Salvinia	Bulrush
Cuban bulrush	Cattail	Eelgrass
Wedelia		

**Other:**

Tim said that the last time he sprayed the hyacinths, it was not effective.

Ryan recommends a TGC stocking rate of 3 fish/acre or less, when used in combination with herbicide.

No documented prior stockings with TGC on file with FWC.

Lake of the Woods was surveyed **December 16, 2008**. Southern naiad (*Najas quadalupensis*) is still the dominant aquatic plant in the lake. It is thick, forming dense mats to a depth of 9 feet and continuing sparse to 12 feet. Although the naiad and other native submersed aquatic plant (SAV) eelgrass (*Vallisneria americana*) are making it difficult for the exotic invasive aquatic plant hydrilla (*Hydrilla verticillata*) to expand, hydrilla is establishing a greater foothold in the shallow water and evident that hydrilla has increased since the last aquatic plant survey, on September 30, 2008 (notes below) and is more prevalent on the west side of the lake, although present on the east side too. No hydrilla was observed on the deep side of the naiad.

The exotic floating aquatic plant, water hyacinth (*Eichhornia crassipes*) was observed from the north along west shoreline to the south side of the lake, representing 0.4 acres. Over half of the hyacinth had been recently treated with an aquatic herbicide by lake resident, Mr. Tim Hayes.

Secchi depth was 6.9 feet. The historic average from 1993 to present has been 3.3 feet. We maintain with the 5 recommendations previously provided (below) to assist Lake of the Woods community. Our next survey will be on January 14<sup>th</sup> in which discussion of grass carp and herbicides will be finalized with the lake liaison members present and summarized to the general public at the lake meeting that evening.

On **September 30, 2008**, we conducted an aquatic plant survey of Lake of the Woods with Ryan Hamm, Florida Fish and Wildlife Conservation Commission (FWC) triploid grass carp biologist and lake resident Brad Fuller. Since our last survey, 31 July 2008, there was a slight increase in the invasive submersed aquatic plant hydrilla and the native submersed aquatic plant southern naiad. This is expected in the summer growing months, but will slow in the fall and winter months. Both plants were observed throughout the lake, but were more prevalent on the west side of the lake, which has generally a longer shallow sloped bottom. The naiad remains the dominate submersed aquatic plant to a depth of 7-8 feet, however, hydrilla is expanding in the shallow areas. We did not find hydrilla on the deep side of the naiad, although because it needs less light to grow, it is capable of establishing there. Exotic water hyacinths were observed at several sites from the NW to the SE, approximately 0.3 acres.

As before, recommendations are as follows:

1. Hydrilla - This invasive exotic aquatic plant will continue to expand, therefore, it is recommended that a management plan be established to keep it from increasing. Possible considerations could be spot treatment with an aquatic plant herbicide and/or introduction of triploid grass carp, both permitted by the FL Fish & Wildlife Conservation Commission (FWC). Your DEP herbicide permit can be modified by the FWC, as that authority was recently transferred to the FWC.
2. Continue to work to reduce the water hyacinths and decrease the number of sites it is established. Educate waterfront owners to hand remove small populations. With such an increased effort, the plant could be eliminated from the lake.
3. Consider management of the torpedo grass, cattails and prime rose willow.
4. Seminole County Lake Management can participate to several degrees in management of these concerns