

**On September 8, 2009**, Gloria Eby (Seminole County [SC] Senior Environmental Scientist), Dean G Barber (SC Consultant) and three lake residents, Larry Floyd, Ray Coltrane and Nick Helyer surveyed the aquatic plants in Bear Gully Lake.

Hydrilla (*Hydrilla verticillata*) which had previously been observed only at: discharge canal south of Tiqua Island Court, inflow ditch on the north side of Dr. Graham's residence, inflow ditch adjacent to Goldenrod Drive and near the shore at Mr. Nick Helyer's property on Gabriella Lane, was observed throughout the lake to a depth of 5 feet. Although this is a significant expansion of this invasive aquatic plant, other native submersed aquatic vegetation (SAV): coontail (*Ceratophyllum demersum*), roadgrass (*Eleocharis baldwinii*), baby tears (*Micranthemum glomeratum*), southern naiad (*Najas guadalupensis*), bladderwort (*Utricularia inflata*) and eelgrass (*Vallisneria americana*) have expanded also in the last several months. In fact, southern naiad, which is the most abundant SAV in the lake, has established both inshore and offshore (to 6.5 feet) of the hydrilla.

Bladderwort and eelgrass were the most abundant inshore SAV. All of these plants, especially the southern naiad, bladderwort and eelgrass, are playing a key role in checking the expansion of the hydrilla. With the coming colder months plant growth will slow, but for the native SAV to continue to check the hydrilla, more triploid grass carp will need to be added to the lake to assist the native vegetation. It is suggested that 2 triploid grass carp/acre be added to the lake, or 274 fish. SC will continue to monitor the lake for any possible change in this recommendation.

The most abundant emergent aquatic plant continues to be the invasive torpedo grass (*Panicum repens*) which is present on all lake resident's waterfront. It is recommended that residents remove this exotic species and replant with beneficial native aquatic plants. These native plants with maintenance of your waterfront, will help keep the torpedo grass from reestablishing. Be sure you have an FWC Aquatic plant permit for this activity for mechanical or hand removal if greater than the allowable access corridor (50ft or 50% of shoreline- whichever is less) or if removing using herbicides.

Gloria also discussed with the lake residence onboard for the survey, Dr. Harvey Harper's extensive study: Bear Gully Lake Hydrologic/Nutrient Budget and Water Quality Management Plan, which is in the final stages of completion. This broad report will include recommendation for future management of the lake. Gloria has suggested, in the near future, that Dr. Harper present his findings and recommendations to an annual meeting of the residents of Bear Gully Lake..

**On 1 July 2009**, Gloria Eby (Seminole County Senior Environmental Scientist), Marianne Pluchino (SC Senior Environmental Scientist), Dean G Barber (SC Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Bear Gully Lake while conducting a Lake Vegetation Index (LVI). A LVI is used to assess a waterbody's health by documenting the aquatic and wetland plants in 4 of 12 randomly chosen lake sectors. During this assessment two boats were used with 2 sectors surveyed by each vessel. All 4 sectors are represented in this report. Forty eight species of aquatic and wetland plants were observed in these four sectors, 41 were native and 7 exotic plant species. The major exotic of concern was hydrilla (*Hydrilla verticillata*) which was observed in 3 of the 4 sectors. Although it represented a small amount of the lake's plant community, less than 1.0 acres, hydrilla has the greatest potential for expanding and becoming the dominant species in the lake. Other exotic plants included: alligator weed (*Alternanthera philoxeroides*), para grass (*Brachiaria mutica*), wild

taro or elephant ear (*Colocasia esculenta*), umbrella plant (*Cyperus alternifolius*), torpedo grass (*Panicum repens*), and creeping oxeye (*Wedelia trilobata*). Alligator weed is controlled by the alligator weed flea beetle and is not an exotic of concern. However, the others will continue to expand and if un-checked, they will cover more shoreline and can reduce native plant diversity. This is especially true for elephant ear, torpedo grass and creeping oxeye. The only exotic tree observed was Chinese tallow (*Sapium sebiferum*). Although it was not present in the assessed sectors, both the exotic floating plant water hyacinth (*Eichhornia crassipes*) and punk tree (*Melaleuca quinquenervia*) are present. It is recommended that these plants be removed as they will expand. There were 6 native submersed aquatic vegetation (SAV) including: coontail (*Ceratophyllum demersum*), road grass (*Eleocharis baldwinii*), baby tears (*Micranthemum glomeratum*), southern naiad (*Najas guadalupensis*), bladderwort (*Utricularia inflata*), eelgrass (*Vallisneria americana*), and the one exotic, hydrilla. Southern naiad was the dominate aquatic/wetland species in 3 of the 4 sectors, present to a depth of 9 feet, while eel grass was observed to 8 feet. These submersed aquatic plants will play a key role in helping prevent the expansion of hydrilla.

The Secchi (water quality) was 3.1 feet at a depth of 9.3 feet. Previous reading was 3 ft on 18 June 2009. The historic Secchi readings, from February 1982 to present, including 124 samples, has been 0.7-4 feet. All this information and much more is available on the Seminole County Water Atlas at: <http://www.seminole.wateratlas.usf.edu>  
CORRECTION-There were 6 SAV and para grass is not an SAV.

**On Wednesday, 25 June 2008**, Gloria Eby and Dean G Barber surveyed Bear Gully Lake. Submersed aquatic vegetation (SAV) included natives of southern naiad, eelgrass and some baby tears were observed throughout the lake to a depth of 4.5 feet. This is an expansion of eelgrass from the previous survey, 27 February 2008. Exotic SAV, hydrilla, was observed in shallow water adjacent to the shore, on the east side of the lake from the discharge creek between Tigra Island Court and Old Bear Run to the inflow at Goldenrod Drive. No hydrilla was found in deeper water or on the west side of the lake. During the last survey, hydrilla was observed only at the above mentioned inflow and outflow, and at an inflow adjacent to Dr. Graham's property. This is a hydrilla expansion from the last survey. Secchi disc was 0.5 meters or about 1.6 feet. There was a significant algae bloom of *Botryococcus sp.* which was a factor in reducing the water visibility/secchi disc reading.

**Recommendations** - Even though the hydrilla is present at additional sites, it is not showing up in deeper water, most likely, because of the presents of triploid grass carp are controlling it. We will still increase our frequency of monitoring.

Still recommend hand removal of hydrilla adjacent to the shore and possibly treating it with herbicide in the above mentioned inflow and outflow. Continue to monitor and remove hydrilla re-growth. The exotic emergent torpedograss was observed throughout the lake's shoreline. It is the most dominant emergent aquatic plant in the lake and very invasive. Recommend that lakefront owners remove torpedo grass, either by hand removal or herbicide (Rodeo) and replant with native vegetation. Use of a herbicide would require a permit from the Regional Biologist, Amy Giannotti, [amy.giannotti@dep.state.fl.us](mailto:amy.giannotti@dep.state.fl.us). Recommended getting several sites in different subdivisions for torpedograss removal and re-planting of native aquatic plants. Seminole County could offer workshops on managing waterfronts.

**On February 17, 2009**, Gloria Eby (Seminole County (SC) Senior Environmental Scientist), Dean G Barber (SC Consultant) and Carol Watral (SC MSBU coordinator) surveyed the aquatic plants in Bear Gully Lake. Hydrilla (*Hydrilla verticillata*) was observed at the previously noted locations: discharge canal south of Tiqua Island Court, inflow ditch on the north side of Dr. Graham's residence, inflow ditch adjacent to Goldenrod Drive and near the shore at Mr. Nick Helyer's property on Gabriella Lane. This invasive plant was healthy, but has not expanded at these sites noted on previous surveys (10/8/2008 & 12/18/2008). Other submersed aquatic vegetation (SAV) included: coontail (*Ceratophyllum demersum*), roadgrass (*Eleocharis baldwinii*), filamentous algae, baby tears (*Micranthemum glomeratum*), southern naiad (*Najas guadalupensis*), bladderwort (*Utricularia inflata*) and eelgrass (*Vallisneria americana*). The amount of these SAV have also not changed in the last noted surveys. All of these SAV represent less than 2-4 percent of the lake bottom. The Florida Fish and Wildlife Conservation Commission recommends that SAV's cover over 30 percent of the lake bottom for stable fisheries and best management practices for a lake. Hopefully native SAVs will start to expand in the early spring and we will continue to monitor.

The most abundant emergent aquatic plant remains the invasive torpedo grass (*Panicum repens*) which is present on all lake resident's waterfront. It is recommended that residents remove this exotic species and replant with beneficial native aquatic plants. Those interested in aquascaping their waterfront as they landscape their lawns could contact me as we can provide resources/assistance for Bear Gully resident

**Bear Gully Lake was surveyed on December 18, 2008.** Hydrilla was observed at the previous locations: discharge canal south of Tiqua Island Court, inflow ditch adjacent to Dr. Graham's residence, however we did not see hydrilla at the inflow ditch (adjacent to Goldenrod Drive) from the boat. We stopped to talk to Mr. Nick Helyer and he pointed out a submersed aquatic plant in shore and adjacent to his boathouse; it was hydrilla. Several surveys ago, we walked the shore and found sparse hydrilla in shallow water, less than 1 foot. We suspect that it may be in this location at several sites around the lake, but it is not moving out into deeper water. As of our last survey (October 21<sup>st</sup>) there is no change in the hydrilla population density within Bear Gully Lake.

Submersed native aquatic plants, southern naiad and eelgrass were also observed, but not expanding as reported in the last survey. This is most likely a result of the colder months in which most aquatic plants, especially natives, significantly reduce their growth rate. An additional native submersed aquatic plant, baby tears (*Micranthemum glomeratum*) was observed.

Observed a Melaleuca tree on the NE side of the lake. The truck had been previously cut and is presently growing back. It should be controlled to prevent establishment of more of this invasive exotic tree.

At this time, LMP does not recommend stocking additional triploid grass carp.

**Surveyed Bear Gully Lake on October 8, 2008.** Hydrilla, a submersed invasive aquatic plant, was noted at all the previously observed locations: inflow ditch adjacent to Goldenrod Drive, discharge canal south of Tigua Island Court, and the inflow ditch adjacent to Dr. Graham's residence. With the recent rains, mostly associated to T.S. Fay, the high density of hydrilla at the Goldenrod ditch seem to have been blown out by excessive water flow. Dragging the lake bottom in and around the site did not produce additional hydrilla in the lake. Hydrilla was still observed in the ditch, but at a much lower density than noted in the past.

Hydrilla was found further into the lake adjacent to the Tigua Island outfall, to a depth of 4.5 feet than previously noted. It has not been observed this far into the lake on previous surveys. A point of concern. Water hyacinth are still present on the eastern side of this outfall, representing 0.1 acres. The submersed native aquatic plants, eelgrass and southern naiad, are expanding in the shallow water, a significant change from previous surveys when very little submersed aquatic vegetation have been observed. This is a significant improvement and will be a key factor in inhibiting hydrilla expansion into the lake in the future. Eelgrass was present to 5.5 feet and southern naiad to 6.5 feet.

Additional grass carp stocking is still not recommended at this time. In the past and presently with few native submersed aquatic plants, grass carp would hamper and possibly prevent establishment and expansion of these plants, most notably eelgrass and southern naiad. As indicated, these plants will not only inhibited establishment of hydrilla, but uptake nutrients and provide fish and wildlife habitat, both highly important to a good aquatic ecosystem. With present frequency of monitoring of the lake, a more opportune time for grass carp stocking can be determined.