

On 4 September 2009, Dean G Barber (Seminole County Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed to a depth of 5 feet, healthy and throughout the lake. This is the most of this species observed in the last 2 years. Although previously established to 3-3.5 feet, with the recent increase in water level, hydrilla has continued to grow to the surface as the water has come up. Native submersed aquatic vegetation (SAV) especially: coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), stonewort (*Nitella spp.*), babytears (*Micranthemum umbrosum*), bladderwort (*Utricularia inflata* & *U. foliosa*) and road grass (*Eleocharis baldwinii*) are competing with the hydrilla for space, however, hydrilla is now the dominant aquatic plant in both the emergent and submersed aquatic plants within the lake. Although this is significant increase in hydrilla, as the fall months approach, all aquatic plant growth will begin to slow. However considering these factors it is recommended that 10 triploid grass carp be stocked in the lake and 15 in the northern cove. The latter stocked within a temporary barrier to be released into the lake at a later date (3-6 months, based on surveys) after significant reduction of hydrilla in the northern cove has been achieved.

The April 25, 2009 plantings are still doing well and continue to expand at all the resident waterfronts. The treatment in the northern canal has reduced the fragrant water lily (*Nymphaea odorata*) and opened navigation, however the hydrilla has filled in the opened areas. SC contractor has pointed out that leaving the lilies on the sides of the northern cove can reduce other species in that area. Future treatments will be use this concept, while keeping the center area open. The contractor has been advised to treat cattails and open widen two accesses, mostly through fragrant water lily, from the wetland east through to the area north of the central deep pool and main access from the southern portion of the lake to the central deep pool.

Two grass carp were seen. The staff gauge reading was 41.00 feet, which was up from the July 2009 reading of 40.30 feet. Secchi reading (water clarity) was 3.4 feet down from July reading of 4.1 feet. The historic Secchi readings for 32 samples from 2000 to present has been from 1 to 4.6 feet.

On 2 July 2009, Dean G Barber (Seminole County Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed to a depth of 3 feet, healthy and throughout the lake, even in the shallow wetland area adjacent to the golf course. Even though it was in the wetland, few plants were observed in this area. This is the most hydrilla that has been seen since last summer, especially in the shallow water adjacent to the deepest portion of the lake, where the hydrilla is established in thick healthy populations. It is definitely the dominant submersed aquatic vegetation (SAV) in the lake. However, the native plants, especially the native SAV; fanwort (*Cabomba caroliniana*) first time documented in Lake Amory, coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), stonewort (*Nitella spp.*), babytears (*Micranthemum umbrosum*), bladderwort (*Utricularia inflata* & *U. foliosa*) and road grass (*Eleocharis baldwinii*), as well as the grass carp are still a factor in preventing the hydrilla from a more significant expansion.

The April 25, 2009 plantings are still doing well and expanding at all the resident waterfronts. The treatment in the northern canal has reduced the fragrant water lily and opened navigation.

Some cattails were observed adjacent to the wetland and need to be treated. Recent torpedo grass (*Panicum repens*) treatment was successful.

No grass carp were seen. The staff gauge reading was 40.30 feet which was down from the previous month survey of 40.45 feet. Secchi reading (water clarity) was 4.1 feet in a depth of 19 feet. The historic Secchi readings for 32 samples from 2000 to present has been from 1 to 4.6 feet.

On **June 4, 2009**, Dean G Barber (Seminole County Consultant), and Thomas Calhoun (SC Assistant Scientist) surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed to a depth of 3.5 feet, healthy, and throughout the lake except in the shallow wetland area adjacent to the golf course. Most of these hydrilla populations were sparse surrounded by native aquatic plants. It was apparent that between the triploid grass carp and native submersed aquatic plants (SAV); coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), stonewort (*Nitella spp.*), babytears (*Micranthemum umbrosum*), bladderwort (*Utricularia inflata*) and road grass (*Eleocharis baldwinii*), were preventing the hydrilla from a significant expansion. In the eastern shallow area adjacent to the lake's deepest hole, there was 0.1 acres of thick hydrilla, which was attempting to expand to the NW, where native SAV are presently limiting it.

All of the April 25, 2009 recently planted resident waterfronts had good aquatic plant survival, even though water levels are down from the date of planting. The site planted with mostly bulrush (*Scirpus validus*), had over 80% of the bulrush with new growth, even though all of these plants were presently out of water.

Two grass carp were sited. The staff gauge was 40.45 feet, previous survey.

Additional carp were added on **May 8, 2009**, (15 grass carp fish, 10-12") as hydrilla was expanding with the increase in water elevation.

On **April 21, 2009**, Gloria Eby and Dean G Barber (SC Consultant), surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed along the north and east side of the deep middle portion of the lake, the northern canal and the northeast discharge canal. It has expanded the most on the eastern shore of the deep middle area of the lake. These plants are the healthiest hydrilla in the lake with little other aquatic plants to compete for space. In the two northern areas it appears to be more stressed from grass carp, algae coating it and competition with native SAV, especially bladderwort (*Utricularia inflata*) and road grass (*Eleocharis baldwinii*), although the bladderwort population has been significantly reduced from the previous survey. Two hydrilla plant clusters were observed in the southern area, which continues to be relatively free of the invasive submersed aquatic plant. Presently, hydrilla is expanding only in the deep middle portion of the lake.

All previously reported submersed aquatic plants (SAV) continue to be present with the addition of a pondweed (*Potamogeton diversifolius*), which was observed throughout the lake. Southern naiad (*Najas guadalupensis*) has expanded significantly as the bladderwort recedes.

The marine algae has been identified by two different algae experts as either *Caloglossa ogasawaeraensis* or *Enteromorpha prolifera*.

We will be shipping additional samples to FDEP with notes for further evaluation/determination. Both of these species are marine/brackish algae that is sometimes found in freshwater systems. Attached is info on *Enteromorpha*. [Good school project if you know someone :\)](#)

Six grass carp were observed, several over 3 feet in length. The staff gauge was 40.5 feet.

On **March 25, 2009**, Gloria Eby and Dean G Barber (SC Consultant) surveyed the aquatic plants in Lake Amory. Hydrilla continues to decrease, especially as native SAV expands. Hydrilla was present to a depth of 2 feet as water level continues to drop. It was almost entirely in the northern half of the lake, although 3 hydrilla plants were observed in the southern area of the lake. All previously observed SAV species were still present, however, the two native submersed aquatic plants, bladderwort and road grass were the most observed SAV, overtaking hydrilla. The amount of algae on the SAV continues to decrease. All of these observations are good, especially as the spring growth season starts, when hydrilla will usually expand before the other native SAV.

Four triploid grass carp were observed near the surface, one over 18 lbs. The marine algae, continues to be present.

On **February 25, 2009**, Gloria Eby, Dean G Barber (SC Consultant) and lakefront resident Steve Barnes surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed only in the northern half of the lake to a depth of 2 ½ feet, but reaching the surface. As previously reported, it was covered with algae, thin and stressed. However, other submersed aquatic vegetation (SAV) was also covered with algae. These included native SAV: bladderwort (*Utricularia inflata*), two bacopa's (*Bacopa caroliniana*) & (*Bacopa monnieri*), coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), red ludwigia (*Ludwigia repens*), muskgrass (*Chara* spp.), baby tears (*Micranthemum umbrosum*), and road grass (*Eleocharis baldwinii*). All of these native SAVs are competing with hydrilla for space, especially the bladderwort which had increased from previous surveys. The amount of hydrilla has decreased since the February 2, 2009 survey. Torpedo grass (*Panicum repens*) still has short stems protruding above the water surface, making it difficult to control with herbicide. On a positive note, it is not expanding.

A marine algae was observed in Lake Amory. A sample was taken for further analysis and sent to the FDEP lab in Tallahassee. Sample was then shipped to China by FDEP biologists for further determination.

Two large grass carp were observed. The staff gauge was at 40.9 feet, January 27, 2009 reading was 40.88 feet.

On **February 4, 2009**, Dean G Barber (Seminole County [SC] Consultant) and Thomas Calhoun (SC assistant scientist), surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed mostly in the northern half of the lake, with one small cluster of plant in the southwest corner of the lake. This invasive plant was to a depth of 3 feet, within inches of the surface. It was coated with algae, with few new growth tips. Hydrilla was more prevalent in this northern area than previous monthly surveys. Even though it is more dominant than the other SAV it is still stressed. All previously noted SAVs were also observed with bladderwort

(*Utricularia inflata*) more prevalent than previous surveys. Filamentous algae has increased covering most emergent and SAVs to a depth of 3 feet. There was less than 0.1 acre of filamentous algae on the water surface, mostly in the discharge canal.

Most of the torpedo grass had short stems, close to the surface and reduced in abundance. In these conditions, herbicide treatment is less effective as there is less plant surface area for the product to be sprayed on, therefore, less chemical to be translocated to the roots. One large grass carp was observed near the surface in the discharge canal. Secchi (water clarity) was 1.7 meters (5.6 feet).

On **December 28, 2008**, Dean G Barber (Seminole County Consultant), surveyed the aquatic plants in Lake Amory. Hydrilla (*Hydrilla verticillata*) was observed around the circumference of the lake, however, few plants were observed in the southwest corner of the lake, south of the golf course. From the central deep area of the lake to the northern shore, hydrilla was the dominant submersed aquatic vegetation (SAV), present from the shallow water to a 3 foot depth. Hydrilla was covered with algae, stressed with little or no new growth. Other SAV, all native, included: bladderwort (*Utricularia inflata*), two bacopa's (*Bacopa caroliniana*) & (*Bacopa monnieri*), coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), red ludwigia (*Ludwigia repens*), Muskgrass (*Chara spp.*), baby tears (*Micranthemum umbrosum*), and road grass (*Eleocharis baldwinii*). Bladderwort and bacopa's were the next most prevalent SAV. The algae on all the SAV has been observed in the last two monthly surveys, however, there is more algae on the SAV than previously noted. Two grass carp were observed. Both were near the surface and quite large (~ 5-8 lbs.).

Lake Amory was surveyed on **November 26, 2008**. Hydrilla was observed from the golf tee adjacent to West Crystal Drive around the eastern and northern side of the lake to the cove off of Lake Drive. It was most abundant in the cove, where it is the dominant aquatic plant. There was no hydrilla in the area adjacent to the golf course. This is a greater expanse than previously reported, but not a significant increase. However, during the October 29, 2008 survey the hydrilla was stressed and covered with algae. The hydrilla in the cove was healthy with little algae. All the previous native submersed aquatic vegetation (SAV) were still observed competing with the hydrilla. This included: bladderworts (*Utricularia inflata*) & (*Utricularia gibba*), two bacopa's (*Bacopa caroliniana*) & (*Bacopa monnieri*), coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), red ludwigia (*Ludwigia repens*), baby tears (*Micranthemum glomeratum*) & (*Micranthemum umbrosum*), hair grass (*Eleocharis spp.*).

At this time (Nov. 26th) we do not recommend an additional stocking and will continue to monitor hydrilla's growth and effectiveness of current grass carp stocking rate with each survey.

On **29 October 2008** Lake Amory was surveyed. Staff gauge was 40.8 feet. Hydrilla was observed adjacent to the shore to 2-3 feet from 4 homes east of Steve Barnes counterclockwise through the canal, the cove and back to deep water. From the start of the golf course back around past the Barnes' property, no hydrilla was observed. This is partly because the two species of bacopa (*Bacopa caroliniana* & *monnieri*) were dominant, making it difficult for the hydrilla to establish. This invasive plant was stressed, covered with algae, present in low density and up to 3 ft in length. Several native submersed aquatic vegetation (SAV) were observed

competing with the hydrilla. This included: bladderwort (*Utricularia inflata*), two bacopa's, coontail (*Ceratophyllum demersum*), southern naiad (*Najas guadalupensis*), red ludwigia (*ludwigia repens*), baby tears (*Micranthemum glomeratum*), hair grass (*eleocharis*). The aquatic grass, Maidencane (*Panicum hemitomon*) is expanding. One factor for this is the monthly maintenance program which includes spraying of the exotic torpedo grass (*Panicum repens*), which is in the same habitat as the maidencane. However there were areas, especially in the wetland adjacent to the golf course, that some of the torpedo grass had been missed by the herbicide application.

Although no grass carp were observed, present population should be able to control this hydrilla growth. Combined with monthly lake surveys it can be determined whether further action would be required.