

On **3 September 2009**, Gloria Eby (Seminole County [SC] Senior Environmental Scientist), Carol Watrel (SC MSBU Project Manager), Dean G Barber (SC Consultant) and Dave Axel (Lake Mills Liaison) surveyed the aquatic plants in Lake Mills. Only small fragments of hydrilla (*Hydrilla verticillata*) was observed, stressed and covered with algae. As previously reported during the 23 July 2009 survey, most of the bottom was covered with a thick coat of filamentous algae, which with the Sonar herbicide still in the lake at concentrations below 1 ppb, will play a key role in inhibiting hydrilla tuber re-growth.. The most abundant submersed aquatic vegetation (SAV) continues to be healthy coontail (*Ceratophyllum demersum*) observed to a depth of 9 feet. Eelgrass (*Vallisneria americana*) which was not previously seen, was observed at several sites.

Both Gloria and Carol discussed with Dave Axel the proposed plan and budget for the next year. This was followed by a visit to the grass carp barrier to view its construction and possible improvements.

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 Mills. Little hydrilla (*Hydrilla verticillata*) was observed, most of the observed hydrilla showed no new growth, was stressed and several plants were covered with algae. Much of the bottom was covered with a thick coat of filamentous algae, which will significantly restrict new hydrilla tuber growth from reaching light because of the algae covering the bottom. The dominate submersed aquatic vegetation (SAV) was very healthy coontail (*Ceratophyllum demersum*) which was seen throughout the lake to a depth of 9 feet (excellent!). The most extensive coontail populations were on the east and west side of the lake. Other SAV observed were: lemon bacopa (*Bacopa caroliniana*), roadgrass (*Eleocharis baldwinii*), both baby tears (*Micranthemum glomeratum & umbrosum*). Lemon bacopa was observed at more sites than previously noted, a good sign! No southern naiad (*Najas guadalupensis*), or eelgrass (*Vallisneria americana*) were seen, however, as the native SAV return, which is expected with the suppression of the hydrilla, southern naiad, roadgrass and eelgrass should become the most abundant SAV.

The most abundant emergent aquatic plant continues to be the invasive torpedo grass (*Panicum repens*) which is present adjacent to most lake resident's waterfront. However, this plant has been reduced by the monthly maintenance program. In several of these locations the native grass, maidencane (*Panicum hemitomon*) is expanding into the former exotic torpedo grass habitat. It is also recommended that residents remove the torpedo grass and replant with beneficial native aquatic plants, such as, maidencane, pickerelweed (*Pontederia cordata*), or swamp lily (*Crinum americanum*). The latter two have beautiful flowers and are present in the lake. 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 plants using herbicides. Contact FWC Biologist Amy Giannotti at: [Amy.Giannotti@MyFWC.com](mailto:Amy.Giannotti@MyFWC.com) or 407-275-4004. If you have any questions you can contact Gloria at the above e-mail or call 407-665-2439.

The water level was 41.05 feet. Of 213 gauge reading from June 1990 to present, levels have varied from 38.6 to 44.20 feet. Historic average has been 41.4 feet.

**17 April 2009 Note:** As an update, Lake Mills was treated with the “bump” treatment using Sonar One (a fluridone product) as scheduled on March 25<sup>th</sup>. We concluded our 21 day post treatment inspection on

April 15<sup>th</sup> surveying the treated hydrilla. Additionally we collected 3 water samples (FasTest) to determine product concentration in the water and 3 plant samples (EffecTest) to determine treatment impact level to plants. We are awaiting laboratory results to determine if additional treatments are necessary and to advise on precautionary irrigation advisory as soon as results delivered.

General observations: Hydrilla is responding as scheduled to the herbicide treatment. In several locations, the dying hydrilla is covered with algae (photo#1 & #4). In other locations, the hydrilla was densely covered with small droplets like algae as the hydrilla brakes down (photo#2). However, in the NE corner of the lake some the impacted plants had growth in which we are closely monitoring (photo#3) in conjunction with laboratory data evaluation should this area require any additional treatments.

Of the native submersed aquatic vegetation (SAV) observed in past lake aquatic plant surveys: coontail (*Ceratophyllum demersum*), eelgrass (*Vallisneria americana*), stonewort (*Nitella spp.*) and hair grass (*eleocharis baldwinii*), only coontail and eelgrass were seen. However, it is anticipated with the significant reduction of hydrilla from this treatment, these native plants will expand, playing a key role, with the triploid grass carp fish, in making it difficult for the hydrilla to re-establish. Some uptake of Sonar One was evident (white on plant stems or leaves) on cattails (*Typha spp.*), torpedograss (*Panicum repens*) and spatterdock (*Nuphar luteum*). All these plants will recover.

Carp News!

The carp barrier is complete (photo attached) and Ryan Hamm, FWC Biologist, has issued permit to stock. We are schedule for fish to be delivered within the next 3 weeks (500 fish).

**“FAQ”-** We have had several calls/e-mails with questions about the treatment and is it “missing my shoreline”. To answer- Sonar (fluridone) is a systemic herbicide product that is administered into the lake that is absorbed into the plant attacking chloroplast cells (food producing cells) essentially starving the plant of carbohydrates (food) and killing off the plant. Since this process at the cellular level, it does take upwards of 80 days to see the full effects of the treatment. This is unlike a contact herbicide, in which directly impacts plant upon contact. With this treatment, the zone targeted is waters 12 feet or less which encompasses the *entire* shoreline of Lake Mills, constituting a whole lake treatment.

On **April 15, 2009**, Gloria, Dean and Dan surveyed the treated hydrilla, 56 days after the initial treatment and collected 3 water samples (FasTest) and 3 plant samples (EffecTest). Hydrilla continues to respond to the herbicide treatment. In several locations, the dying hydrilla is covered with algae. In other locations, the hydrilla was densely covered with small droplets like algae as the hydrilla brakes down. However, in the NE corner of the lake some of the white portions of the impacted plants had tips that were recovering, becoming green again.

Lake Mills was surveyed on **March 10, 2009** by Gloria Eby (Seminole County [SC] Senior Environmental Scientist), and Dean G Barber (SC Consultant), three representatives from SePro, including Dan Bergersen and a rep. from SC's herbicide contractor, AAM, Inc. SePro is the manufacture of Sonar One, the aquatic herbicide used to treat the lake's hydrilla (*Hydrilla verticillata*) infestation. AAM rep. applied an additional 44 pails of Sonar One to maintain the product concentration at the desired rate of 8-15 ppb as a continuation from the initial treatment of 120 pails applied February 10, 2009. Also 3 water samples were taken to determine water concentration of Sonar One in parts per billion (FasTest) and 3 plant samples to determine condition of the hydrilla plants EffecTest). The observed hydrilla plant's new growth had either broken off or remained but was devoid of pigment. Both are excellent signs of plant impact for 28 days after initial treatment. These same conditions were observed on the hydrilla throughout the lake.

Of the native submersed aquatic vegetation (SAV) observed in past lake aquatic plant surveys: coontail (*Ceratophyllum demersum*), eelgrass (*Vallisneria americana*), stonewort (*Nitella spp.*) and hair grass (*eleocharis baldwinii*), only coontail and eelgrass were seen. However, it is anticipated with the significant reduction of hydrilla from this treatment, these native plants will expand, playing a key role, with the triploid grass carp, in making it difficult for the hydrilla to re-establish.

Some uptake of Sonar One was evident (white on plant's stems or leaves) on cattails (*Typha spp.*), torpedograss (*Panicum repens*) and spatterdock (*Nuphar luteum*). All these plants will recover.

Based upon the inspection conducted on **January 14<sup>th</sup>, 2009**, we have determined that the hydrilla is actively growing and will be scheduled for the initial treatment on February 10<sup>th</sup>, 2009.

As provided in the management plan (mailed back in November) here are the details related to the treatment:

Initial Application: February 10th, 120 pails of Sonar One applied to perimeter and areas of growing hydrilla.

Day 28: Lake survey taking 3 water samples to measure ppb (FasTest); plan 2nd treatment according to test results.

Day 35: Apply 44 pails of Sonar One or as determined by FasTest.

Day 56 or 21 days following 2nd treatment: Lake survey taking 3 water samples to measure ppb (FasTest) and

EffecTest (plant test- determines condition of hydrilla).

Day 77: Lake survey taking FasTest and EffecTest.

Day 90: Final lake survey as determined by tests/progress of treatment.

Use of Sonar does require a precautionary irrigation advisory. This is specific to those who use lake water for irrigation purposes only. A community message will be distributed via our reverse 911 calling system the week prior to treatment as a reminder.

As we progress throughout the treatment we will send e-mail updates on our observations, test results and once precautionary irrigation advisory is lifted.

Additional news...For the east grass carp barrier, repair quotes are in and we are working with Dave Axel on this project. The new design has removable gates designed to be removed for significant storm events. From T.S. Fay, minor stream stabilization will be required in which Seminole County's Roads-Stormwater crews have quickly assessed and making the necessary repairs to ensure barrier.

The grass carp fish have been ordered (500 total) and are awaiting completion of the barrier, anticipated for mid-February. Ryan Hamm of FWC was looking into electrofishing (or shocking) Lake Mills to better determine the carp fish rates within the lake. This method is conducted by using a specialized boat that sends an electrical current into the water temporarily stunning the fish. This does not harm the fish and is effective in determining fish diversity however, carp have been known for its ability to flee the electrical current. We look forward to FWC's determination of this survey (thanks Ryan!).

**December 23, 2008 Note:** Please find the latest observations below. We are schedule to survey Lake Mills again on January 14<sup>th</sup> which will give us a better indication of a treatment date. We are hoping for an earlier treatment but this is dependent on weather from now until then. Dave Axel has been coordinating in the re-install of the east carp barrier (into Mills Creek) and we have reserved 500 grass carp fish for a mid-January stocking. Ryan Hamm [FWC] is currently reviewing any permit amendment needs and should be ready to stock the lake once the barrier is complete.

Observations:

Lake Mills was surveyed on **December 16, 2008**. Gloria Eby, Dean G Barber [Seminole County (SC) Lake Management], Carol Watral [SC MSBU], Thomas Calhoun [SC intern], Ryan Hamm [FWC grass carp biologist] and Dan Bergeson [SePro rep] surveyed the aquatic plants, with particular attention to hydrilla (*Hydrilla verticillata*). Mr. Bergersen was there in preparation for the upcoming herbicide treatment either in January or February. Date of treatment will be based on water temperature, and condition of the hydrilla.

As reported on the November 19, 2008 and October 7, 2008 surveys, hydrilla exists from a shallow high density, thinning to a depth of 9 feet. The plant is 8 feet long in 9 feet water depth. Native submersed aquatic vegetation (SAV) consist of: coontail (*Ceratophyllum demersum*), eelgrass (*Vallisneria americana*), stonewort (*Nitella spp.*) and hair grass (*Eleocharis baldwinii*) though limited in density due to hydrilla.

No triploid grass carp were observed. Mr. Hamm was present to observe the hydrilla population related to future grass carp stocking to control hydrilla re-growth.

Water hyacinth, not observed in the lake for over a year, was treated by SC's herbicide contractor. The invasive floating aquatic plant was behind the cattails near the county park. This month's treatment (December) will include treating the cattails adjacent to the park (near inflow) at no additional cost to the current herbicide contract.

On **November 19, 2008**, Gloria Eby (Seminole County[SC] Lake Manager) & Dean G Barber (SC Consultant) surveyed Lake Mills.

The invasive submersed aquatic plant, hydrilla (*Hydrilla verticillata*) has not changed basically from the previous survey, October 7, 2008. It continues to be in high density from shallow water to over 9 feet in depth. The percent of hydrilla on the surface maybe slightly less than the previous survey as we enter the winter months and the plant slows its growth. Native submersed aquatic plants that were present included coontail (*Ceratophyllum demersum*), eelgrass (*Vallisneria americana*) and hair grass (*Eleocharis baldwinii*). All of these native populations have been reduced as the hydrilla expands.

No grass carp were observed.

On **7 October 2008** Lake Mills was surveyed. The invasive aquatic plant, hydrilla, has increased in density and percent throughout the water column from 0 to 9.5 feet. This is a significant change since the July 9, 2008 survey when the hydrilla was from 0 to 7-8 feet in depth with a small percent on the surface. The previous rise in water level and then decline, has cause the hydrilla to lie laterally on the surface, making it appear that there are more plant stems coming from the bottom. Because of the shallow slope on the western side of the lake, the hydrilla extends further out into the water on that side of the lake. The native submersed aquatic plants, southern naiad and eleocharis (hair grass), both have been reduced by the expansion of the hydrilla. Hydrilla growth will start declining in the fall and winter months and the plant should recede from the surface in several areas. There were few docks/boat slips that did not have access through the hydrilla into open water and the canals were open to navigation.

The invasive emergent aquatic plant, torpedo grass, is showing impact from the aquatic herbicide treatments. No water hyacinth were observed. Hopefully with the herbicide management program, this invasive floating plant can be eradicated from the lake. The cattails, an invasive native plant, appears to be expanding, especially in the area adjacent to the Seminole County Lake Mills Park.

No grass carp were observed.

Gloria Eby and Dean G Barber.

On **October 7<sup>th</sup>**, we inspected Lake Mills with emphasis on boat access issues due to hydrilla. Hydrilla was observed to a depth of 9 feet and within this zone (0-9ft) the biomass density has increased likely to the capacity for the growing season. The plant actually increased with the

higher water elevation and now that the level is back down, hydrilla is resting laterally (across the surface). The area's most affected during our survey is the east shoreline (Mills Cove) and the north cove (Mills Estates). Most docks (with boats in slip) did have access where by boats can enter/exit as did the west canals.

We maintain, as scheduled, with monitoring the lake in November and December in anticipation for treatment in January/February.

Why until January/February? This is when typically hydrilla is putting out new shoots and when we need to treat. Sonar will not be effective until this time since the plant is near/at its dormant phase and ultimately by treating prior to this, the plant will survive the treatment (exposure to the product) due to not translocating chemical effectively into the plant.

Sonar can give 1 to 3 years of control with carp levels maintaining the hydrilla re-growth. The 2004 sonar treatment gave approximately 1.5-2 years of control within the lake.

Treating a lake with Sonar consists of the initial treatment and one to two "bump" treatments to keep the concentration (in parts per billion ppb) of the product within the lake high enough to kill-off the plant. Treatment (exposure) can be from 70-120 days at which during this time the product remains active in the water. We will be testing the water for ppb concentrations of Sonar and the plant to ensure the ppb levels remain high for maximum exposure and control throughout this time. Additionally, we have already purchased product for the initial treatment and will be ready to go when proper conditions arise.

We will be discussing with the liaisons members about the carp barrier, additional carp stockings and if an informative letter to the community would be helpful for the residents as we move forward.

**25 September 2008 Note:** We will be resuming our lake surveys on October 7th (weather permitting) and provide observations shortly after. August & September surveys were cancelled due to flooding issues.

For our newer folks to these updates...Welcome! As Dave, Bill and Connie know, Lake Management Program inspects Lake Mills on a monthly basis and provides observations to them as our liaisons members for the community. We hope to continue to build this e-mail list updating the community with Lake Mills news. Some of the addresses are from the sign-in sheet at our last lake meeting and some are addresses gathered from recent MSBU inquiries.

If you know anyone who would like to be included please share this and have them e-mail me to add.

As most of you know, the large scale treatment will be this winter during the onset of when the plant is producing new growth/shoots. We will start to monitor the lake extensively in December for the on-set of this occurrence.

Hydrilla (although not apparent with the existing biomass!) is approaching or is at its dormant period. The plant has matured for this growing season and will commence in the winter (as early as December). It is at this occurrence, the most effective time to treat the existing plant and the emerging shoots; hence why most Sonar treatments are in the winter.

During our assessments we have been documenting boat access as we move towards the large-scale treatment in the winter. We are cognizant that a spot treatment may be necessary for the canal areas and others but ideally it is best to hold off until the main treatment.

Again, we will update the group of our findings with each inspection and as we approach the Sonar treatment.

Lake Mill's aquatic plants were surveyed **8 July 2008**, with special interest in the exotic submersed aquatic plant, hydrilla. As on the previous survey on 21 May, hydrilla was observed to a depth of 8 feet, competing with native submersed aquatic vegetation primarily southern naiad, eleocharis (hair grass) and two algae's, that look like plants, chara and nitella. Hydrilla has expanded more in the inshore area than offshore. In 1-3 feet it is on or near the surface being the dominant aquatic plant, however, at the time of this survey it was not impeding boat access and was not at as high density that it can achieve. In some areas, depths of 3-5 feet, the hydrilla is just below the surface at higher density than previously observed. Present stocking of grass carp, 3-5 fish/acre, native submersed aquatic vegetation and the lake's tannic water are a primary factor in slowing hydrilla's expansion.

Water clarity or Secchi reading was 2.1 meters, almost 7 feet.

The invasive aquatic grass, torpedo grass, which was noted in the previous survey to be expanding, has been successfully treated by the contractor, Applied Aquatics, Inc.