

Greetings Mirror Lake Residents,

Please find the latest bioassessment report for your lake below. Our next scheduled survey will be **October 20th**, weather permitting. Key highlights of this update include:

- LVI (Lake Vegetation Index) results
- Hydrilla update- found sparsely intermixed with native plants
- Submersed aquatic vegetation (SAV) update
- Treatment of lily pads
- Recommendations for you and your waterbody

### **Bioassessment**

On **August 19th, 2014**, SCLMP personnel, Thomas Calhoun, Gloria Eby, and Marianne Pluchino, surveyed the aquatic plants in **Mirror Lake** and conducted a Lake Vegetation Index (LVI) assessment.

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.

Mirror Lake is 31 acres and is located in the Little Wekiva watershed. Scores for Mirror Lake have ranged from 19 to 56. The LVI score for 2014 was 56 in the healthy range.

<b>LVI Range</b>	<b>Description</b>
78-100	Exceptional
43-77	Healthy
0-42	Impaired

Hydrilla was found in a few areas mixed in with the native vegetation to a depth of 2 feet. It has not expanded since the previous inspection. We will continue to monitor hydrilla to see if any further action is required.

Six species of submersed aquatic vegetation (SAV) were found during the inspection, five of which were native species. These native species included: lemon bacopa to 2 feet, road grass to 2 feet, 2 types of bladderwort to 10 feet, and eelgrass to 4 feet. Eelgrass was also found topping out (reaching the surface) at a depth of 3 feet. Bladderwort was the dominant species of SAV found in Mirror Lake. Native SAV plays an important part within Mirror Lake by providing wildlife habitat, reducing nutrients in the water, and by competing with hydrilla for space.

**Photo: Close up of bladderwort.**



The access corridors in the southern end of Mirror Lake were still open; however, the native lily pads (spatterdock and the fragrant water lily) have expanded lake-wide. American lotus has also significantly expanded along the northwestern shore of the lake. Both of these species will be targeted during the next treatment.

**Photo: Fragrant water lily.**



**Photo: Alligator weed found at the southern end of Mirror Lake.**



The water elevation at the time of inspection was 58.49 feet above sea level, an increase from the previous inspection reading of 58.71 feet. The secchi disk (used to measure water clarity) was visible on the bottom in a depth of 10.4 feet. One grass carp fish was observed during this inspection.

### **Recommendations for waterbody:**

- 1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists), and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff will be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along shorelines (such as pickerelweed, duck potato and canna).
- 2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter waterways. Leaf debris contains high levels of phosphorous that can negatively impact your lakes.
- 3 Increase educational outreach programs, such as Shoreline Restoration Workshops, Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs. Share information about

reducing personal pollution by: decreasing fertilizer usage; using only phosphorous-free and slow release nitrogen fertilizers, keeping a functional shoreline with beneficial native aquatic plants, and by keeping grass clippings out of your lake and the stormdrains that lead to the lake. All these activities aid in protecting your lake! Contact Seminole County Lake Management Program (407) 665-2439 for more information regarding the free educational programs available.

4 Help spread the word! Obtain email addresses from neighbors not currently on the distribution list so that these reports can be shared with everyone. Valuable information is contained within these assessments.

Greetings Mirror Lake Residents,

Please find the latest bioassessment report for your lake below. Our next scheduled survey will be **August 19th**; weather permitting. Key highlights of this update will include:

- Hydrilla update- found sparsely intermixed with native plants
- Submersed aquatic vegetation (SAV) update- excellent diversity observed
- Lily pads and American lotus expanding
- Recommendations for you and your waterbody

### **Bioassessment**

On **July 21<sup>st</sup>, 2014**, SCLMP personnel, Thomas Calhoun and Joey Cordell, surveyed the aquatic plants in **Mirror Lake**.

Hydrilla was found in a few areas mixed in with the native vegetation in less than 1 foot of water. It has not expanded since the previous inspection. We will continue to monitor hydrilla to see if any further action is required.

Six species of submersed aquatic vegetation (SAV) were found during the inspection; five of which were native species. These native species included: lemon bacopa to 3 feet, road grass to 2 feet, 2 types of bladderwort to 5 feet, and eelgrass to 3.5 feet. Eelgrass was also found topping out at a depth of 2 feet. Native SAV plays an important part within Mirror Lake by providing wildlife habitat, reducing nutrients and competing for space with hydrilla.

**Photo: Left bladderwort bloom. Right lemon bacopa bloom.**



**Photo: Eelgrass reaching surface at the boat ramp.**



The access corridors in the southern end of Mirror Lake were still open; however the native lily pads (spatterdock and the fragrant water lily) have expanded lake wide. American lotus has also significantly expanded along the northwestern shore of the lake. Both of these species will be targeted during the next treatment.

**Photo: American lotus.**



**Photo: Wildlife on Mirror Lake.**



The water elevation at the time of inspection was 58.71 feet above sea level; an increase from the previous inspection reading of 58.38 feet. The secchi reading (measurement for water clarity) was visible on the bottom in a depth of 7.6 feet. No grass carp fish were seen during this inspection.

## **Recommendations for waterbody:**

- 1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists), and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff will be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along shorelines (such as pickerelweed, duck potato and canna).
- 2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter waterways. Leaf debris contains high levels of phosphorous that can negatively impact your lakes.
- 3 Increase educational outreach programs, i.e. Shoreline Restoration Workshops, Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs, and reduction of personal pollution by: decreasing fertilizer usage; using only phosphorous free and slow release nitrogen types of fertilizers; keeping a functional shoreline with beneficial native aquatic plants; keeping grass clippings out of your lake and the storm drains that lead to the lake. All these activities aid in protecting your lake! Contact Seminole County Lake Management Program (407) 665-2439 for more information regarding the free educational programs available.
- 4 Help spread the word! Obtain email addresses from neighbors not currently on the distribution list so that these reports can be shared with everyone. Valuable information is contained within these assessments.

Greetings Mirror Lake Residents,

Please find the latest bioassessment report for your lake below. Our next scheduled survey will be **July 21st**; weather permitting. Key highlights of this update will include:

- Hydrilla update- found sparsely intermixed with native plants
- Submersed aquatic vegetation (SAV) update- excellent diversity observed
- Emergent plants- alligatorweed increasing
- Recommendations for you and your waterbody

On **March 20<sup>th</sup>, 2014**, SCLMP personnel, Thomas Calhoun and Dean Barber, surveyed the aquatic plants in **Mirror Lake**.

Hydrilla was found in a few areas mixed in with the native vegetation in less than 1 foot of water. It is suspected that with the increase in water elevation, the grass carp fish will be able to consume and reduce the hydrilla establishing in shallow water.

Seven SAV were found during the inspection; six of which were native species. These native species included: lemon bacopa to 2 feet, smooth water hyssop to 2 feet, road grass to 6 feet, 2 types of bladderwort to 5 feet, and eelgrass to 5 feet. Bladderwort and eelgrass were found “topped out” reaching the surface at a depth of 3 feet. Native SAV plays an important part within Mirror Lake by providing wildlife habitat, reducing nutrients, and competing for space with hydrilla.

**Photo: Eelgrass and bladderwort.**



**Photo: Bladderwort topped out at a depth of 3 feet.**



Alligatorweed and torpedo grass was found in more locations along the shoreline since the previous inspection. As result, both species will be targeted during the next herbicide treatment. The access corridors in the southern end of Mirror Lake were observed open and free of vegetation. Other invasive emergent vegetation found included: alligatorweed, dwarf papyrus, dog fennel, elephant ear, and bur-head sedge.

**Photo: Example of the invasive exotic alligatorweed.**



The water elevation at the time of inspection was 58.67 feet above sea level; a decrease from the previous inspection reading of 59.25 feet. The secchi reading (measurement for water clarity) was 8.5 feet. Two grass carp fish were seen during this inspection.

**4-23-2014**

### **Bioassessment**

On **April 23<sup>rd</sup>, 2014**, SCLMP personnel, Thomas Calhoun and Joey Cordell, surveyed the aquatic plants in **Mirror Lake**.

Hydrilla was again found in a few areas mixed in with the native vegetation in less than 1 foot of water but in less amounts than the previous inspection.

Eight species of SAV were found during the inspection; seven of which were native species. These native species included: lemon bacopa to 2 feet, smooth water hyssop to 2 feet, road grass to feet, southern naiad to 4 feet, 2 types of bladderwort to 5 feet, and eelgrass to 5 feet. Eelgrass has expanded along the eastern shoreline of the lake.

**Photo: Bladderwort with bloom.**



Alligatorweed and torpedo grass was found impacted along the shoreline since the previous inspection. Both species will continue to be targeted during the routine herbicide treatments.

Four types of lily pads were found to be expanding from the previous inspection. These species included: yellow cow lily, fragrant water lily, banana lily, and American lotus. The access corridors in the southern end of Mirror Lake continue to remain free of vegetation.

**Photo: American lotus found along the north western shore of the Mirror Lake.**



The water elevation at the time of inspection was 58.54 feet above sea level; a decrease from the previous inspection reading of 58.67 feet. The secchi reading (measurement for water clarity) was 8.1 feet. Two grass carp fish were seen during this inspection.

**5-19-2014**

### **Bioassessment**

On **May 19<sup>th</sup>, 2014**, SCLMP personnel, Thomas Calhoun and Joey Cordell, surveyed the aquatic plants in **Mirror Lake**.

Hydrilla was found in a few areas mixed in with the native vegetation in less than 1 foot of water. We will continue to monitor hydrilla to see if any further action is required.

Seven species of submersed aquatic vegetation (SAV) were found during the inspection; six of which were native species. These native species included: lemon bacopa to 3 feet, smooth water hyssop to 1 foot, southern naiad to 1 foot, 2 types of bladderwort to 7 feet, and eelgrass to 4.5 feet. Bladderwort was the dominant SAV species topping out (reaching the surface) in a depth of 4 feet. Eelgrass was also found topping out at a depth of 3 feet. Native SAV plays an important part within Mirror Lake by providing wildlife habitat, reducing nutrients and competing for space with hydrilla.

**Photo: Bladderwort found to a depth of 7 feet.**



The access corridors in the southern end of Mirror Lake were still open. Patches of alligatorweed and torpedo grass are growing in the southern end of Mirror Lake these patches will be targeted the next herbicide treatment.

Other invasive emergent vegetation found included: dwarf papyrus, dog fennel, elephant ear and bur-head sedge. The floating plant, American lotus, has expanded along the western shoreline since the previous inspection.

**Photo: Alligatorweed found in the southern portion of Mirror Lake.**



The water elevation at the time of inspection was 58.38 feet above sea level; a decrease from the previous inspection reading of 58.54 feet. The secchi reading (measurement for water clarity) was 12.8 feet out of a total depth of 14.3 feet. Two grass carp fish were seen during this inspection.

### **Recommendations for waterbody:**

- 1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists), and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff will be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along shorelines (such as pickerelweed, duck potato and canna).
- 2 Consider increasing street sweeping services during times of peak leaf fall to ensure that this debris does not enter waterways. Leaf debris contains high levels of phosphorous that can negatively impact your lakes.
- 3 Increase educational outreach programs, i.e. Shoreline Restoration Workshops, Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs, and reduction of personal pollution by: decreasing fertilizer usage; using only phosphorous free fertilizers; keeping a functional shoreline with beneficial native aquatic plants; keeping grass clippings out of your lake and the storm drains that lead to the lake. All these activities aid in protecting your lake! Contact Seminole County Lake Management Program (407) 665-2439 for more information regarding the free educational programs available.
- 4 Help spread the word! Obtain email addresses from neighbors not currently on the distribution list so that these reports can be shared with everyone. Valuable information is contained within these assessments.

Greetings Mirror Lake residents!

Please find the latest bioassessment report for your lake below. Our next scheduled survey will be March 17<sup>th</sup>; weather permitting. Key highlights of this update will include:

- Submersed aquatic vegetation (SAV) update- excellent diversity observed
- Hydrilla update- found sparsely intermixed with native SAV
- Emergent plants- native maidencane found and increase in exotic torpedo grass observed
- Herbicide treatment status and effects of fluctuating lake levels
- Recommendations for you and your waterbody

On **August 20<sup>th</sup>, 2013**, Seminole County Lake Management and Water Quality Program personnel (Thomas Calhoun, Gloria Eby, and Marianne Pluchino) surveyed the aquatic plants and conducted a Lake Vegetation Index (LVI) of **Mirror Lake**.

The LVI was created by the Florida Department of Environmental Protection as a rapid screening tool for ecological condition; it determines how closely a lake's flora resembles that of an undisturbed lake. Mirror Lake is 31.68 surface acres in size and is located in the Little Wekiva watershed. Historical LVI scores range from 26 to 54 with the most recent score of 45. Four of the five scores were in the healthy range with one score in the impaired range.

<b>LVI Range</b>	<b>Description</b>
78-100	Exceptional
38-77	Healthy
0-37	Impaired

The most recent Trophic State Index (TSI, which assesses water quality) from 7/30/2013 was 30 ('good' quality). The water quality range for 61 samples taken from 1994 to 2013 has been 11 to 70 ranging from good to poor water quality. All this information is available on the Seminole County Water Atlas.

<http://www.seminole.wateratlas.usf.edu/lake/?wbodyatlas=lake&wbodyid=7616>

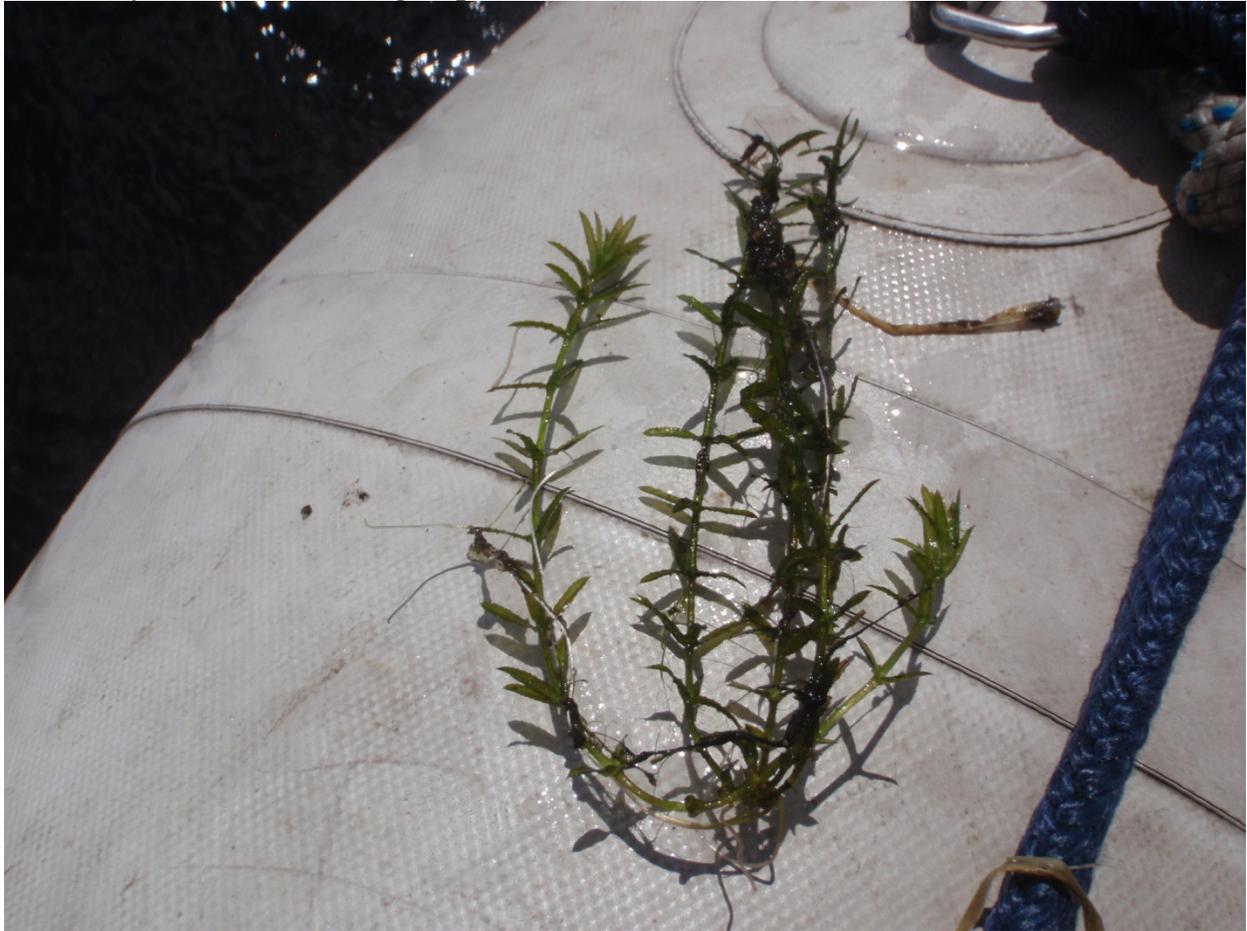
Nine species of submersed aquatic vegetation (SAV) were found during the inspection; eight of which were native species. These native species included: lemon bacopa to 3 feet, smooth water hyssop to 3 feet, road grass to 8 feet, southern naiad to 9 feet, stonewort to 9 feet, 3 types of bladderwort to 9 feet, and eelgrass to 9 feet. Both lemon bacopa and bladderwort have expanded in the inshore areas of the lake. Native SAV plays an important role within Mirror Lake by providing wildlife habitat, reducing nutrients, and competing for space with hydrilla.

**Photo: Typical sample in Mirror Lake consisting of eelgrass, stonewort, and bladderwort.**



Hydrilla was the only invasive exotic species found and in less quantities than the previous inspection. It is suspected that with the increase in water elevation, the grass carp fish will be able to consume and reduce the population of hydrilla establishing in shallow water.

**Photo: Hydrilla found during inspection.**



Torpedo grass was showing signs of impact from last month's treatment. The access corridors in the southern end of Mirror Lake were still open. Other invasive emergent vegetation found included: alligator weed, dwarf papyrus, dog fennel, elephant ear, and bur-head sedge. Bur-head sedge was found growing within pickerelweed in the southern portion of the lake. This species will be targeted during the next herbicide treatments.

**Photo: Treated torpedo grass along the eastern shoreline.**



The water elevation at the time of inspection was 59.25 feet above sea level, a decrease from the previous inspection reading of 59.44 feet. The secchi reading (measurement for water clarity) was 8.9 feet. Three grass carp fish were seen during this inspection.

12-10-2013

On **December 10<sup>th</sup>, 2013**, Seminole County Lake Management personnel, Thomas Calhoun and Gloria Eby, surveyed the aquatic plants in **Mirror Lake**.

Ten species of submersed aquatic vegetation (SAV) were found during the inspection; nine of which were native species. These native species included: lemon bacopa to 4 feet, baby's tears to 2 feet, pond weed to 3 feet, southern naiad to 2 feet, stonewort to 3 feet, 2 types of bladderwort to 7 feet, and eelgrass to 6 feet. Stonewort has expanded in the northeast corner of the lake. Native SAV plays an important role within Mirror Lake by providing wildlife habitat, reducing nutrients, and competing for space with hydrilla.

**Photo: Pond weed found in Mirror Lake.**



Hydrilla was the only invasive exotic species found in sparse patches. It is suspected that the grass carp are consuming population of hydrilla establishing in shallow water. No hydrilla was found in depths greater than 3 feet.

**Photo: Southern naiad on left, hydrilla on right.**



All invasive emergent vegetation were showing signs of impact from the previous month's treatment. The access corridors in the southern end of Mirror Lake were still open. Yellow water lily was treated in the southern portion of the lake. Invasive emergent vegetation found included: alligator weed, dwarf papyrus, dog fennel, elephant ear, and bur-head sedge. Alligator weed will be targeted in the southern portion of the lake during the next scheduled herbicide treatment.

**Photo: Open access corridor in the southern portion of Mirror Lake.**



The water elevation at the time of inspection was 58.62 feet above sea level, a decrease from the previous inspection reading of 59.44 feet. The secchi reading (measurement for water clarity) was 7.4 feet. One grass carp fish was seen during this inspection.

**Recommendations for waterbody:**

- 1 Work together with other lakefront owners. Have *at least* one annual lake association meeting, invite guest speakers (such as county or state biologists), and discuss lake specific issues, especially nutrients/lake management recommendations. SCLMP staff will be glad to present our findings from this and other surveys. Continue to increase native aquatic plantings along shorelines (such as pickerelweed, duck potato, and canna).
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