Greetings Residents of the Bear Chain of Lakes!

Below please find the latest bioassessment report for your lake. The next bioassessment will be conducted on September 23rd (weather permitting). Key highlights of this update will include:

- Submersed aquatic vegetation (SAV) - reduced diversity continues to be observed
- Shoreline vegetation observations
- Reduced exotic vegetation in the Linneal Beach Dr. Canal
- Water hyacinth found in Cub Lake - recommend to treat
- Absence of eelgrass and reduction of beneficial SAV recently observed in Cub Lake
- Recommendations for you and your lake

On April 1st, 2014, Seminole County Lake Management Program (SCLMP) staff, Thomas Calhoun and Gloria Eby, surveyed the aquatic plants in Bear Lake.

Four native species of submersed aquatic vegetation (SAV) were observed during inspection. These species included: eelgrass to 12 feet, stonewort to 5 feet, musk grass to 5 feet, and lemon bacopa to 2 feet. This was an increase in diversity since the previous inspection, which had a total of 2 SAV species. However, all other species besides eelgrass was found in very small amounts. Eelgrass remained the dominant plant in the lake, including along the shoreline. No hydrilla was observed during inspection.

Photo: Stonewort found in small amounts.
Many of the shorelines of Bear Lake possessed no aquatic vegetation or were only established with invasive exotic species. This is problematic because there are not enough appropriate shoreline plants to reduce shoreline erosion. Having native aquatic plants along the shoreline can also protect and improve the ecological health of your waterbody and simultaneously provide a great view. Please note that control of aquatic and wetland plants requires a Florida Fish and Wildlife Conservation Commission (FWC) aquatic plant control permit (which is free). Please contact FWC regional biologist Alicia Knecht at (321) 246-0682 or Alicia.Knecht@myfwc.com for your free permit. For more information please visit FWC’s website at: http://www.myfwc.com/license/aquatic-plants/.

No water hyacinths were observed in the canal off of Linneal Beach Drive. Residents of the canal have done a great job of managing this exotic plant! However, other invasive emergent plants were present. These species included: alligatorweed, elephant ear, primrose willow, and cattails.
The Secchi (water clarity) was 12.3 feet in a depth of 21.1 feet at the time of inspection. The water elevation was 103.92 feet. Sixty-eight triploid (sterile) grass carp fish were observed during the inspection.
Little Bear Lake

On April 1st, 2014, Seminole County Lake Management Program (SCLMP) staff, Thomas Calhoun and Gloria Eby, surveyed the aquatic plants in Little Bear Lake.

Submersed aquatic vegetation (SAV) found in Little Bear Lake during this inspection included musk grass and filamentous algae to a depth of 5 feet.

Some of the observed invasive shoreline plants included: elephant ear, water primrose, alligator weed, torpedo grass, and cattails. Some of the beneficial native shoreline plants included: iris, water pennywort, saw grass, pickerelweed, and duck potato.

Photo: Musk grass found at a depth of 5 feet.

The Secchi (water clarity) was 6.9 feet in a depth of 11.9 feet at the time of inspection. The water elevation was 102.91 feet above sea level. No triploid (sterile) grass carp fish were observed during the inspection.
Cub Lake

On April 1st, 2014, Seminole County Lake Management Program (SCLMP) staff, Thomas Calhoun and Gloria Eby, surveyed the aquatic plants in Cub Lake.

An overall decrease in total biomass of beneficial SAV in Cub Lake was observed. Only 3 native SAV species were found during the inspection which included lemon bacopa to a depth of 3 feet and two types of bladderwort to 4 feet. This is a significant decrease in diversity from prior inspection (October 30th, 2013) where 8 species of beneficial native SAV was present. Detritus (broken down organic particles) was abundant in samples greater than 5 feet of water. Eelgrass and hydrilla were not observed during this inspection.

Photo: Example of detritus material and bladderwort observed in lake samples.
Two invasive exotic species, torpedo grass and dwarf papyrus, continues to be the most abundant emergent aquatic plants. Other invasive species included wild taro, water hyacinth, and creeping ox eye. A large patch of water hyacinth continues to reside in Cub Lake near the inflow canal. We highly recommend removing these plants by physical means or by treating with herbicides. If using herbicides, please be sure to obtain your free aquatic plant management permit from FWC prior to treating.
Photo: Water hyacinth found in Cub Lake at inflow canal.
The Secchi (water clarity) was 6.3 feet in a depth of 11.3 feet. The grass carp barrier was found to be free from debris and operational. No grass carp fish were seen during the inspection.

**Lake Recommendations:**

1. Continue to work together with other lakefront owners to control and if possible, eliminate invasive plants observed during this survey and increase native aquatic plantings along shoreline (such as pickerelweed and duck potato). Have at least one annual lake association meeting to discuss lake specific issues.

2. Utilize the valuable educational outreach programs that are available, i.e. Shoreline Restoration Workshops, Florida Yards and Neighborhoods (FYN) interactive presentations, and Lake Management Video mail-outs. Implement a media campaign within the community to reduce personal pollution by: decreasing overall fertilizer usage, using only phosphorous free and slow-release nitrogen fertilizers, keeping a functional shoreline with beneficial native aquatic plants, and keeping grass clippings out of your lake and the storm drains that lead to the lakes. All of 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.

3. These recommendations could be managed by Seminole County by establishing an MSBU, Municipal Service Benefit Unit, for aquatic weed control/enhancement. For additional information contact Carol Watral at (407) 665-7164 or cwatral@seminolecountyfl.gov or http://www.seminolecountyfl.gov/fs/msbu/.
4. Control of aquatic and wetland plants could require a Florida Fish and Wildlife Conservation Commission (FWC) aquatic plant control permit (such as the water hyacinth in Cub). Contact Alicia Knecht at (321) 246-0682 or Alicia.knecht@myfwc.com for a permit and recommendations.

5. Help spread the word! Obtain email addresses from neighbors not currently on the distribution list in order to share this information with others. Valuable information is contained within these reports.
Greetings Residents of The Bear Chain of Lakes!

Below please find the latest bioassessment for your lake. The next bioassessment will be conducted on April 1st (weather permitting). Key highlights of this update will include:

- Lake Vegetation Index (LVI) bioassessment results
- Submersed aquatic vegetation (SAV)- reduced diversity continues to be observed
- Shoreline vegetation observed
- Reduced exotic vegetation in the Linneal Beach Dr. Canal
- Water hyacinth found in Cub Lake- recommend to treat
- Grass clippings observed in the lakes
- Recommendations for you and your lake

On October 3rd, 2013, Seminole County Lake Management and Water Quality Program staff (Thomas Calhoun, Gloria Eby, and Marianne Pluchino) surveyed the aquatic plants in Bear Lake.

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.

Bear Lake is 311 surface acres in size with a mean depth of 12.4 feet, maximum depth of 36.7 feet, and is located in the Little Wekiva watershed. Historical LVI scores range from 26 to 40 with 39 being the most current and in the healthy category (2 points above Impaired ranking).

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<th>LVI Range</th>
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<td>78-100</td>
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<td>38-77</td>
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<td>0-37</td>
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We found one species of submersed aquatic vegetation (SAV) during the inspection which was eelgrass to 10 feet. This was a decrease in diversity since the previous inspection, which had a total of 2 SAV species. Eelgrass remained the dominant plant in the lake, including along the shoreline. There was a decrease in the maximum depth where eelgrass was found compared to the previous inspection (12 feet to 10 feet). No stonewort was found during this inspection.
Many of the shorelines of Bear Lake possessed no aquatic vegetation or were only established with invasive exotic species. This is problematic because there are not enough appropriate shoreline plants to reduce shoreline erosion and affects the LVI score. Having native aquatic plants along the shoreline can also protect and improve the ecological health of your waterbody and simultaneously provide a great view. Please note that control of aquatic and wetland plants requires a Florida Fish and Wildlife Conservation Commission (FWC) aquatic plant control permit (which is free). Please contact FWC regional biologist Alicia Knecht at (321) 246-0682 or Alicia.Knecht@myfwc.com for your free permit. For more information please visit FWC’s website at http://www.myfwc.com/license/aquatic-plants/.

**Photo: Example of bare shoreline with erosion.**
A small amount of water hyacinths were observed in the canal off of Linneal Beach Drive. Residents of the canal have done a great job of managing this exotic plant!

Photo: Linneal Beach Drive Canal.
The Secchi (water clarity) was 13.6 feet in a depth of 18.9 feet at the time of inspection. The water elevation was 103.79 feet; higher than the previous month’s reading of 103.59 feet above sea level. No (sterile) grass carp were observed during the inspection.
Little Bear Lake

On October 30th, 2013, Seminole County Lake Management and Water Quality Program staff (Thomas Calhoun, Gloria Eby, and Marianne Pluchino) surveyed the aquatic plants in Little Bear Lake and conducted a LVI.

Little Bear Lake is 28 surface acres in size with a mean depth of 7.8 feet, maximum depth of 19.6 feet, and is located in the Little Wekiva watershed. Historical LVI scores range from 28 to 39 with 39 being the most current and in the healthy category (2 points above Impaired ranking).

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Submersed aquatic vegetation (SAV) found in Little Bear Lake during this inspection included road grass to a depth of 2 feet and smooth water hyssop to a depth of 1 foot. Filamentous algae was also present during the inspection.

Photo: Submersed aquatic vegetation- smooth water hyssop.
Some of the observed invasive shoreline plants included: elephant ear, water primrose, alligator weed, torpedo grass, Brazilian pepper, and cattails. Some of the beneficial native shoreline plants included: water pennywort, saw grass, pickerelweed, and duck potato.

At the time of inspection a large amount of fresh grass clippings were found floating in Little Bear Lake. Grass clippings can add nutrients to the lake which will cause algae blooms. Instead of blowing clippings into the lake, blow them back into your lawn, which will provide nutrients for your lawn.

Photo: Grass clippings in Little Bear Lake.
The Secchi (water clarity) was 6.3 feet in a depth of 9.4 feet at the time of inspection. The water elevation was 102.7 feet above sea level. No triploid (sterile) grass carp were observed during the inspection.
Cub Lake

On October 30th, 2013, Seminole County Lake Management and Water Quality Program staff (Thomas Calhoun, Gloria Eby, and Marianne Pluchino) surveyed the aquatic plants in Cub Lake and conducted a LVI.

Cub Lake is 14 surface acres in size with a mean depth of 7.1 feet, maximum depth of 16.8 feet, and is located in the Little Wekiva watershed. Historical LVI scores range from 43 to 49 with 45 being the most current and in the healthy category.

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A healthy diversity of native submersed aquatic vegetation (SAV) was observed during the inspection. These species included: lemon bacopa to a depth of 4 feet, road grass to 2 feet, stonewort to 6 feet, musk grass to 3 feet, bladderwort to 6 feet, and eelgrass to 8 feet. Bladderwort was the dominant species of SAV found in Cub Lake. Filamentous algae was also found during the inspection.

Photo: Bladderwort found in Cub Lake.

Invasive exotic species found during the inspection included: torpedo grass, alligator weed, wild taro, primrose willow, and dwarf papyrus. These continue to be the most abundant emergent aquatic plants and were present throughout the lake. A large size patch of water hyacinth was also found at the Cub Lake inflow canal. We highly recommend removing these plants by physical means or by treating with herbicides. If using herbicides, please be sure to obtain your free aquatic plant management permit from FWC prior to treating.
Photo: Water hyacinth found at Cub Lake inflow canal.
The Secchi (water clarity) was 6.9 feet in a depth of 10.9 feet. The grass carp barrier was free from debris and operational.

**Recommendations:**

1. Continue to work together or establish a lake association, with other lakefront owners to control and if possible, eliminate invasive plants observed during this survey and increase native aquatic plantings along shoreline (such as pickerelweed and duck potato). Have at least one annual lake association meeting to discuss lake specific issues.

2. Increase educational outreach programs i.e. Florida Yards and Neighborhoods (FYN), Lake Management Video mail-outs, and reduction of pointless personal pollution (contact Seminole County Lake Management Program, Gloria Eby, (407) 665-2439 for assistance.

3. These recommendations could be managed by Seminole County by establishing an MSBU, Municipal Service Benefit Unit, for aquatic weed control/enhancement. For additional information contact Carol Watral at (407) 665-7164 or ewatral@seminolecountyfl.gov or [http://www.seminolecountyfl.gov/fs/msbu/](http://www.seminolecountyfl.gov/fs/msbu/).

Photo: Grass carp fence.
4. Control of aquatic and wetland plants could require a Florida Fish and Wildlife Conservation Commission (FWC) aquatic plant control permit (such as the lilies in Cub). Contact Alicia Knecht at (321) 246-0682 or Alicia.knecht@myfwc.com for a permit and recommendations.