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Moon Shadow Pond – Greenville, WI

## **Naturalake Biosciences Case History 2019 – Moon Shadow Pond**

### **Project Overview:**

A qualitative approach to determine the effectiveness of using Pondzilla Pro enzyme along with a copper-based algaecide and a flumioxazin herbicide to treat pithophera and hydrodictyon algae. Treatment site took place at Moon Shadow Pond in Greenville, WI (Figure 1). Moon Shadow Pond is a retention pond that is L shape formation and is adjacent to Moon Shadow Estates apartment complex, 8 houses, and a marsh/field where the outflow of the pond drains into. Significant water runoff from the apartment complex and neighboring community increases its nutrient levels throughout the summer and fall. With high nutrient inflow and heavy runoff accumulation, nuisance algal blooms can be prolific during the growing months. Dense pithophera and hydrodictyon algae growth are common throughout the summer and fall.

The pond was observed in the beginning of August which had roughly 30% of the total surface acreage covered in pithophera and hydrodictyon algae (Figures 1-3). There was an entire perimeter ring of pithophera and hydrodictyon algae mix that extend out an average of 15' with clusters of the mix of algae throughout the entire water surface (Figures 1-3). Our goal was to treat the pond for both types of algae to improve access for recreation and enhance aesthetics. Treating the pond for heavy hydrodictyon and pithophera algae growth required us to treat the entire surface area of the pond to inhibit the regrowth and replication of new algal cells. Along with the initial kill of these cells, we needed long term results. Pondzilla Pro enzyme solution played an important role in aiding the algaecides/herbicide used. Pondzilla Pro enzyme is a catalyst in the reaction between the algae and the algaecides/herbicide mixture. This enzyme solution aids the algaecides and herbicides used by breaking down the plant cell wall and allows for easier and quicker penetration of the herbicide mixture.

Pondzilla Pro enzyme also dissolves dead plant cell wall of the akinetes and stored carbohydrates days after the treatment to inhibit the chance of regrowth. Algae from this pond died and decomposed within weeks and did not return to a nuisance level the remainder of the year due to the lasting effects the Pondzilla Pro enzyme solution.

### **Materials and Methods:**

Moon Shadow Pond is located near the Moon Shadow Dr. and Star Dust Ct. intersection in Greenville, WI. The GPS coordinates for the pond are 44.29226 Latitude and -88.51072 Longitude. Moon Shadow Pond is 3.11 surface acres and has an average depth of 6 feet. This pond has a perimeter of 2,352 feet that is surrounded by a tall grass buffer zone with apartment complexes and houses surrounding the area. Moon Shadow pond is a clay lined retention pond that is not aerated. Aquatic vegetation during the treatment perimeter consisted of sago pondweed, pithophera algae, and hydrodictyon algae.

Moon Shadow Pond was treated on August 02, 2019 by Charles Patterson and Travis Pomplun using a broadcast spraying technique with a 3'' pump sprayer on a 14' motor boat. Pond was treated for heavy pithophera and hydrodictyon algae growth. The entire surface acreage was treated to ensure a successful outcome. Treatment mix consisted of 10.0 gal Captain XTR (0.702 ppm), 24.0 oz Clipper (94 ppb), and 3.0 gal Pondzilla pro enzyme (gal/SA). The treatment started at 8:15 AM and ended at 11:00 AM. Treatment was completed in early morning to limit any factors such as change in temperature or pH throughout day. Clipper herbicide typically decreases efficacy as the day progresses due to photosynthetic processes that increase pH levels in the water column. Ambient air temperature during the treatment was 77.0 °F and water temperature was 75.5 °F. Wind was coming in from the NE at about 5 mph and was sunny/party cloudy. After the treatment was completed algae was observed. Photographs of the pond were taken 3 days post-treatment and 30 days post-treatment. Results were recorded and concluded.

### **Results:**

Initially after the treatment was completed (3.0 hrs pos-treatment) on Moon Shadow Pond, algae had already started to turn brown in color and was bubbling from the gases released. Three days

post-treatment resulted in about 75% of the total algae turning brown and white in color (Figures 4-7). Roughly 60 % of the total surface algae had died and dropped to the bottom of the pond to decompose (Figures 4-7). 30 Days post-treatment resulted in all surface algae decaying turning brown and white in color and had descended to the bottom of the pond (Figures 8-11). The pond was free of any surface algae and had little to no regrowth from the pithophera algae or hydrodictyon algae through the majority of the September month. Regrowth did not occur until later in the month of September which by then algae production was limited with the cooler temperatures in the pond.

### Discussion:

Pondzilla Pro enzyme solution was a key part of the success of our algae treatment and degradation of these algal cells after the treatment was completed. This enzyme solution provided us with an accelerated reaction time and easier penetration for the algaecide and herbicide used. Long term results were shown from this treatment. Algae from this pond died and decomposed within weeks and did not come back to an intolerant level. Treatment or re-treatment was not needed the rest of the summer/fall months due to the long-lasting effects of the Pondzilla Pro enzyme solution.

Figure 1. Overview of Moon Shadow Pond (2018).

