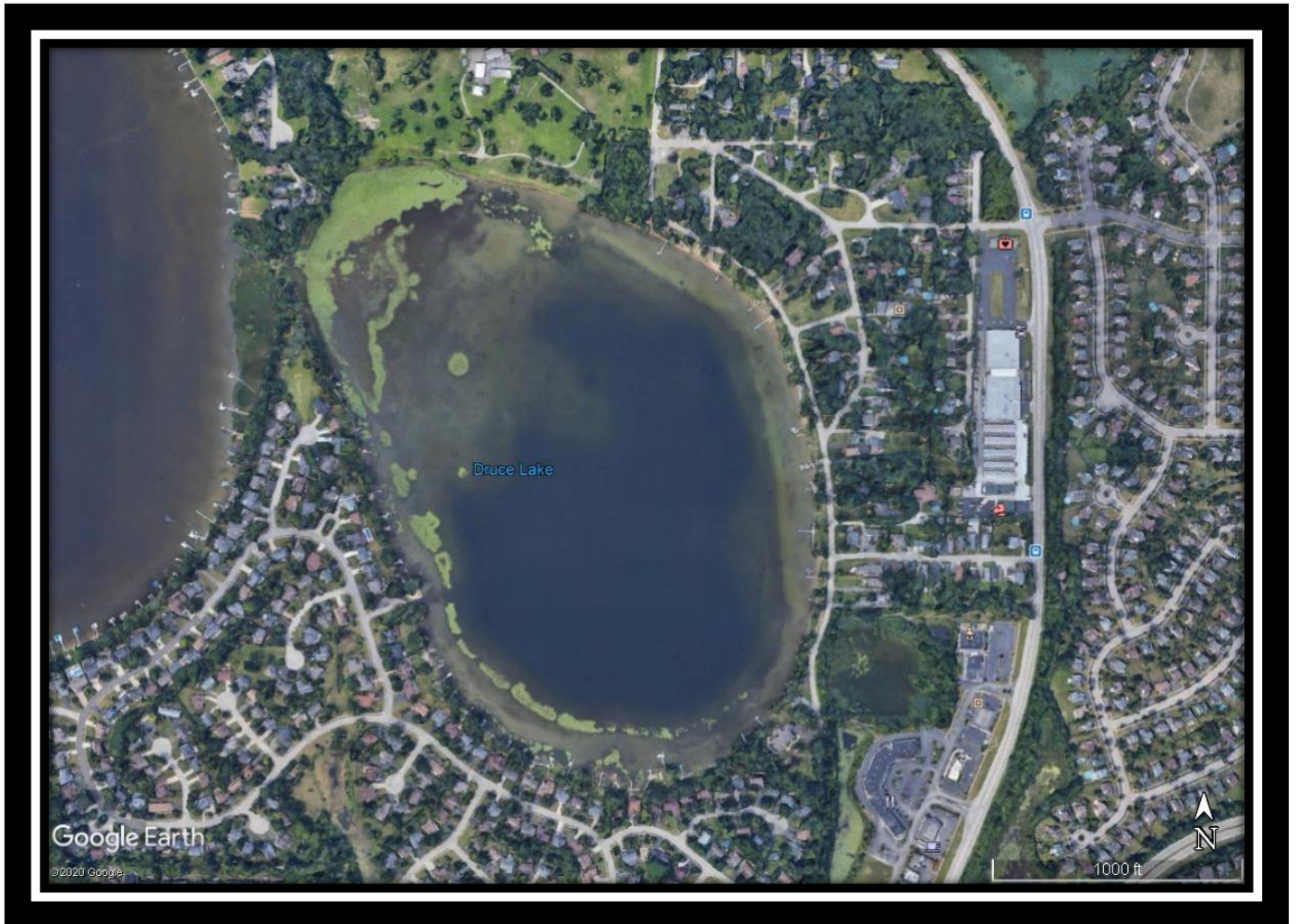


DRUCE LAKE 2020 END OF YEAR SUMMARY
DRUCE LAKE, ILLINOIS



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Submitted To: Mayor Butch Buckley
Michelle Smith
c/o Village of Druce Lake
87 North Lake Ave.,
Druce Lake, IL 60030

November 2020

DRUCE LAKE 2020 SUMMARY

SURVEY INFORMATION

An early spring, aquatic vegetation survey was performed on Druce Lake on May 22, 2020 utilizing BioBase technology. The purpose of this survey was to monitor the health of the lake after the winter ice melt and identify species of aquatic plants in the lake and their densities. The goal each year is to identify areas with invasive species including Eurasian watermilfoil (*Myriophyllum spicatum*) (EWM) and curly-leaf pondweed (*Potamogeton crispus*) (CLP) and determine a management plan when needed. Druce Lake has also historically had chara algae blooms along the Mariner's Cove community shoreline which has caused a disruption in swimming and other recreational activities in the area.

Eurasian watermilfoil is widely distributed throughout the state, is often difficult to control, and is considered to be the most problematic plant across the US. The introduction of Eurasian watermilfoil can drastically alter a waterbody's ecology and create dense mats at the surface of the water. These mats can interfere with swimming and entangle propellers, which hinders boating, fishing, and waterfowl hunting. Heavy infestations may reduce property values. Eurasian watermilfoil can displace native aquatic plants, impacting fish and wildlife.

Curly-leaf pondweed was accidentally introduced to United States waters in the mid-1880s by hobbyists who used it as an aquarium plant. The leaves are reddish-green, oblong, and about 3 inches long, with distinct wavy edges that are finely toothed. The plant prefers cooler water temperatures and usually drops to the lake bottom by early July. It is commonly found in alkaline and high nutrient waters, preferring soft substrate and shallow water depths. The plant thrives in conditions normally less habitable to native plant species. It competes with native plant life and sometimes displaces it. It clogs waterways, inhibiting aquatic recreation and is considered a nuisance in some areas. This plant can be controlled with early spring herbicide treatments, most commonly utilizing Aquathol K.

Chara is a rooted strain of algae. Chara grows attached to the bottom in ponds, lakes, streams and brackish waters. It provides habitat for other species and sediment stabilization. They usually grow in hard water and often become calcified and brittle making it difficult to swim or boat through. Commonly called muskgrass, Chara has a musky odor when it is removed from the water. Chara also produces oxygen for the water and clarifies the water.

During the May survey we identified low densities of two invasive submerged aquatic species Eurasian watermilfoil and curly-leaf pondweed. Additionally, we saw small chara algae plants which commonly appears in Druce Lake every year. At this time the weather was just warming up and we anticipated the plants "topping out" within 1-2 weeks in some areas. The lake also had a healthy population of native submerged plant species. The early ice melt caused invasive plant species to grow early and a herbicide application was recommended to eliminate the invasive species and chara algae to allow the native species to populate the lake and to allow for swimming and recreational traffic.

HERBICIDE APPLICATION

Due to the early ice melt, the growth of plants in 2020 started early and Eurasian watermilfoil, curly-leaf pondweed and chara algae was identified. This created the perfect opportunity to plan a targeted herbicide application to specifically control the invasive species with little effect on native plants. A treatment for 13.84 acres was approved and the treatment was applied on June 10, 2020.

The herbicide application was made with a mix of Tribune diquat herbicide and K-Tea algaecide. This is a contact application designed to quickly control the targeted plants and control the blooms of chara algae that were just below the surface. Chara algae provides numerous benefits for the lake so we only treated the chara along shorelines, in shallow areas.

POST TREATMENT FOLLOW-UP SURVEY

On July 16th we performed a post treatment survey to monitor the results of the herbicide application and to ensure efficacy of the treatment. We identified a small patch of curly leaf pondweed by the boat launch and all other plants around the lake were natives. By July, Druce Lake had a nice diversity of native plant growth filling in. The native species identified included: Slender Naiad, variable pondweed, spotted pondweed, coontail and American pondweed. We also found a significant amount of chara; primarily located in areas less than 2' deep.

2021 PREDICTIONS AND PLANNING

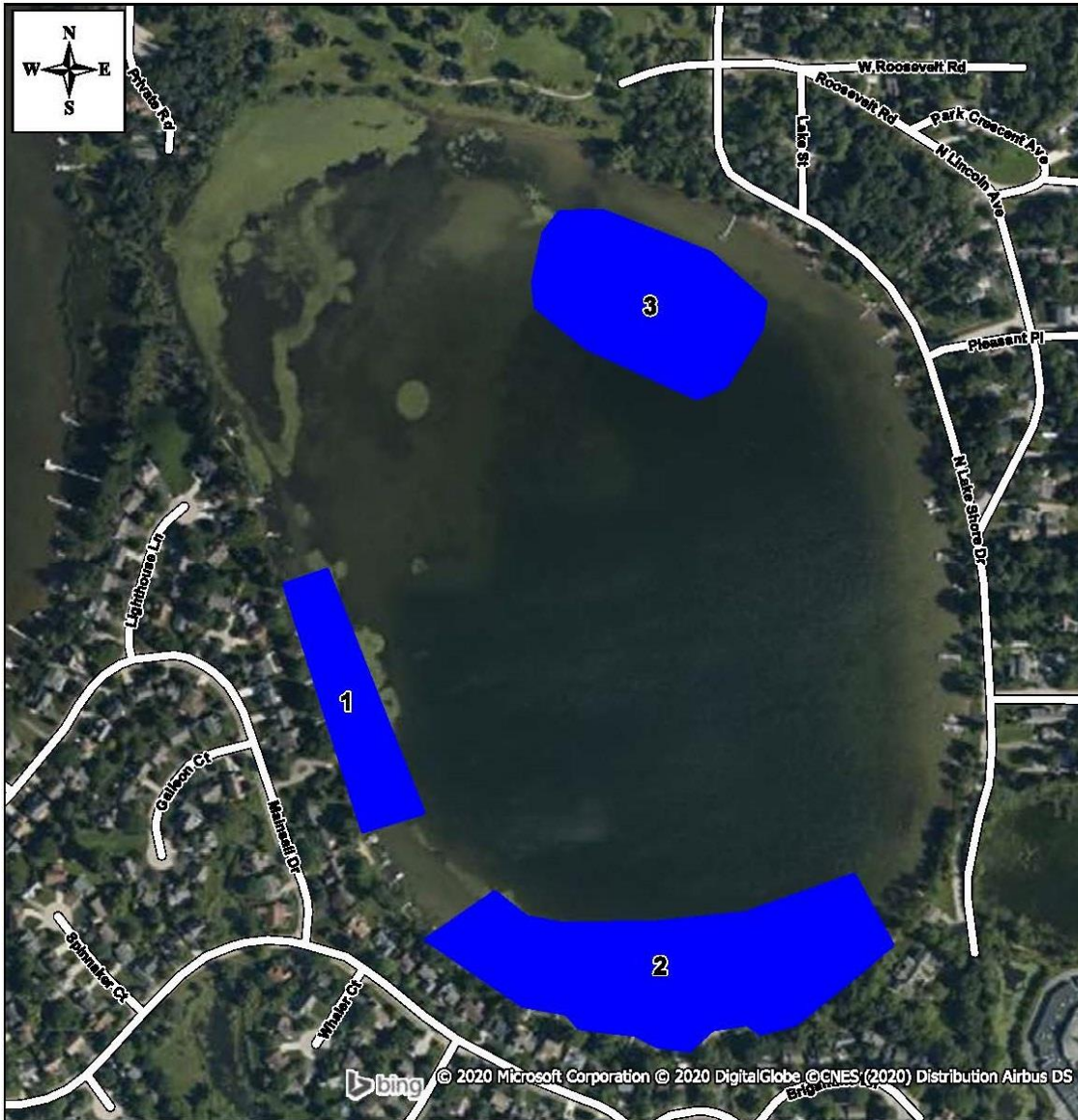
Moving forward in 2021 it is recommended to complete an early spring survey to identify the aquatic vegetation species present. The winter weather and time of ice melt will determine the amount of invasive plant growth. It is likely that another herbicide treatment will be needed.

To maintain the health of Druce Lake it is important to provide education to all residents so everyone can do their part. Removing invasive plant species like phragmites and purple loosestrife (*Lythrum salicaria*) along shorelines is important. Purple loosestrife is a very hardy perennial which can rapidly degrade wetlands, diminishing their value for wildlife habitat. When purple loosestrife becomes established, the habitat where fish and wildlife feed, seek shelter, reproduce, and rear young, quickly becomes choked under a sea of purple flowers. Plants can be pulled, cut, or dug up to make the infestation more manageable and thus limit the spread of purple loosestrife beyond an area of heavy infestation. Purple loosestrife is primarily spread by seed, therefore early control is essential in preventing further distribution of the plant. Non-native Phragmites, also known as common reed, is a perennial, aggressive wetland grass that outcompetes native plants and displaces native animals. Removing these plants early will prevent a larger removal project later.

Also, proper maintenance for the shorelines along the private properties will help to reduce runoff into the lake and help with erosion control. Residents should also consider improving or restoring shoreline habitat to that of a natural shoreline. Lake residents can consider replacing maintained lawns with native vegetation. In those areas that do not have seawalls, plants such as rushes (*Juncus* spp.), sedges (*Carex* spp.), pickerel weed (*Pontederia cordata*), arrowhead (*Sagittaria latifolia*), and blue-flag iris (*Iris virginica*) offer an attractive, low profile community in wet areas. Behind existing seawalls, a variety of upland forbs and grasses that have lower fertilizer/pesticide maintenance requirements than turf grass may be planted in place of the turf grass. Plantings can even occur in front of existing seawalls. Bulrushes (*Scirpus* spp.) and taller emergents are recommended for this. While not providing all the functions of a natural shoreline, plantings in front of seawalls provide fish and invertebrate habitat. In addition, the restoration of natural shoreline or the planting of emergents in front of seawalls also discourages the use of these areas by Canada geese, whose droppings can increase the amount of phosphorus and nitrogen entering the lake. Geese prefer maintained lawns adjacent to shorelines as a food source because predators are clearly visible in lawns as opposed to areas of taller native vegetation. Partial or full restoration of the natural shoreline community with these measures would provide shoreline erosion control and filter runoff to the lakes, thus improving the lake's overall health without interfering with recreational uses of the lake.

Lake users should take precautions to avoid spreading aquatic invasive species to or from Third Lake. Plants such as Eurasian watermilfoil, hydrilla and others can make waters virtually unusable and cause property values to plummet if spread. Creatures such as zebra mussels can clog drains and pipes. Fish diseases such as the emerging VHS (viral hemorrhagic septicemia) can result in large, widespread fish kills. Steps can be taken at access sites to minimize the spread of aquatic invasive species. Individuals should remove mud, plants, fish or animals before transporting equipment, eliminate water from equipment before transporting, clean and dry anything that comes in contact with water (boats, trailers, equipment, clothing, dogs, etc.) and never release plants, fish or animals into a body of water unless they came out of that body of water. The Stop Aquatic Hitchhikers campaign provides outreach and educational resources to lake associations. More information can be found at www.protectyourwaters.net. With these simple steps, individuals can continue to protect the water quality of Druce Lake.

2020 HERBICIDE TREATMENT ZONES



DRUCE LAKE

LEGEND

ACRES:

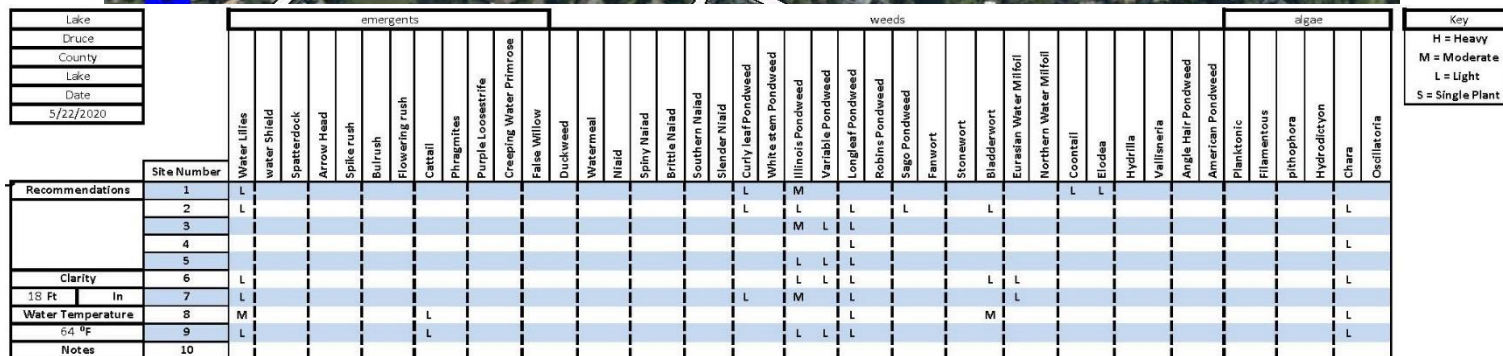
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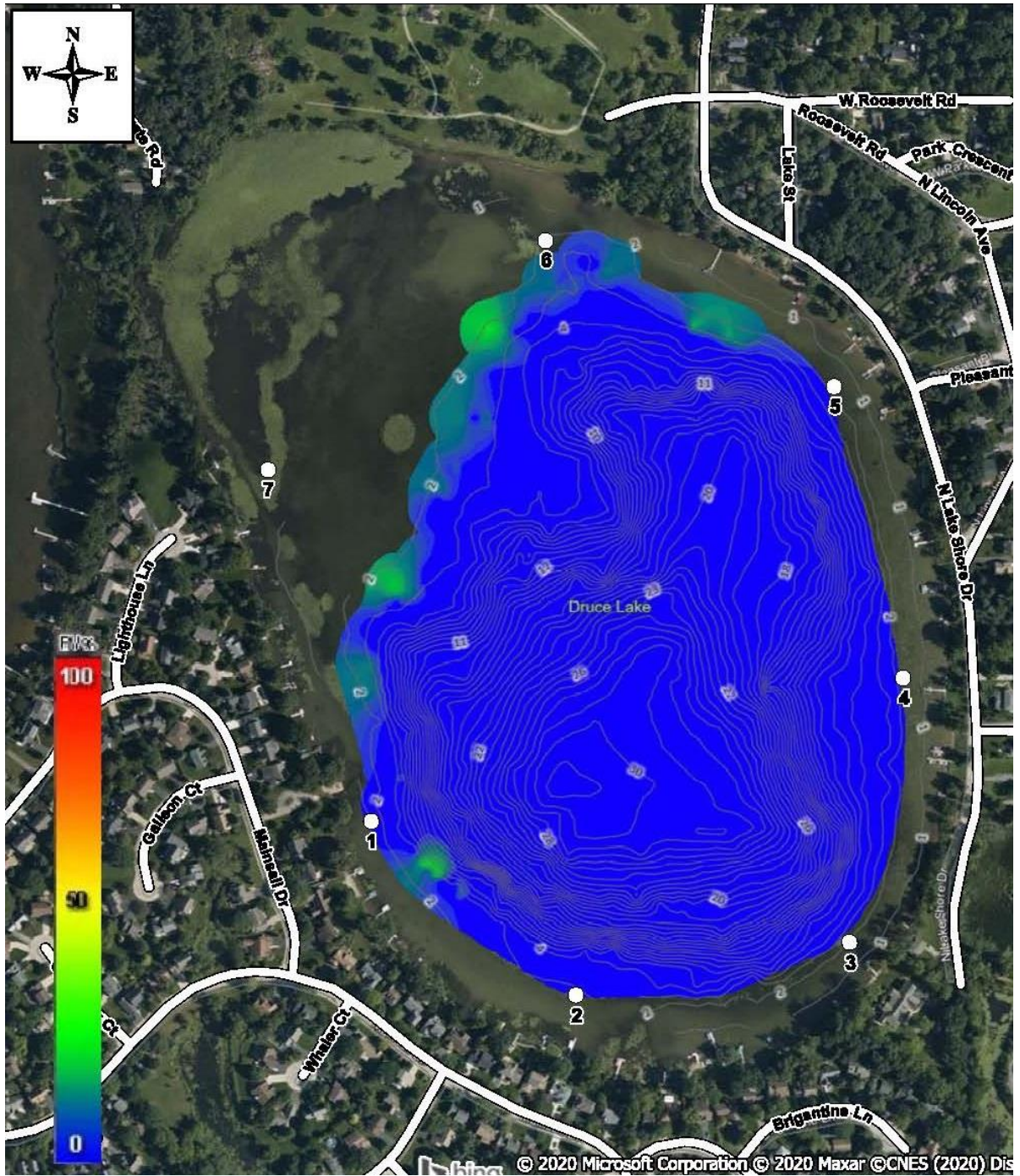
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DATE: May 26, 2020

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POST TREATMENT BIOBASE & PLANT SURVEYS



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|-----------|
| Lake |
| Druce |
| County |
| Lake |
| Date |
| 7/16/2020 |

| Lake Druce County Lake Date 7/16/2020 | | Site Number | emergents | | | | | | | | | | | | weeds | | | | | | | | | | | | | | | algae | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | Water Lilies | water Shield | Spatterdock | Arrow Head | Spikerush | Bulrush | Flowering rush | Cattail | Phragmites | Purple Loosestrife | Creeping Water Primrose | False Willow | Duckweed | Watermeal | Naiad | Spiny Naiad | Brittle Naiad | Southern Naiad | Slender Naiad | Curly leaf Pondweed | White stem Pondweed | Illinois Pondweed | Variable Pondweed | Spotted Pondweed | Robins Pondweed | Sago Pondweed | Fanwort | Stonewort | Bladderwort | Eurasian Water Milfoil | Northern Water Milfoil | Coontail | Elodea | Hydrilla | Vallisneria | Angle Hair Pondweed | American Pondweed | Planktonic | Filamentous | pithophora | Hydrodictyon | Chara | Oscillatoria | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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