

Proactive Steps for Maintaining a Healthy Pond Year-Round

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Being Proactive with Pond Management

- Pond owners who want to and can be active in management of their ponds should be frequently checking in on their pond.
- Spring is a great time to get ahead of pond issues.
- Being proactive is much easier than being reactive.



Get an Early Start on Aquatic Plants

- A lot of plants may not be visible during winter, but are still present and ready to grow in the right conditions
- Look for early signs of plant growth
- Treat before things get out of control
- Much easier to treat smaller areas



Plant Identification

- Control recommendations require identification of all plants in need of control
- Assistance with plant identification requires good photos

Usable



Not Usable



Filamentous Algae

- Includes *Spirogyra*, *Anabaena*, *Lyngbya*, *Pithophora*, and *Oscillatoria*
- Filaments intertwine to form mats similar to wool
- Often mixed with other plants



Control Methods

- Copper Sulfate, Diquat, or Flumioxazin
- May require tank mixes of multiple herbicides and multiple treatments



Duckweed and Watermeal

- Floating plants
- Often mistaken for algae
- Best identified by photos in-hand or in a jar
- Aggressive growers

Control Methods

- Flumioxazin or Fluridone
- Must be careful with oxygen levels
- Multiple treatments



Chara (Muskgrass)

- Attached macroalgae
- Musky smell, crunchy texture
- Whorled branches
- Best identified with close-up photos of branches



Control Methods

- Grass Carp
- Diquat or Chelated copper
- Tank mix of both

Hydrilla

- Extremely Aggressive invasive
- Leaves grow in whorls of 4-8
- Leaves have mid-rib teeth
- Roots with attached tubers

Control Methods

- Grass Carp
- Reproduces from the slightest fragment, so herbicides not a good long-term solution
- Temporary control with Diquat, Flumioxazin, or Fluridone

NON-Native



Hydrilla
Hydrilla verticillata
Photo by Vic Ramey
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Pondweeds (Potamogeton)

- Best identified by photos of entire plant with all leaves present
- Important to see if same plant has different types of leaves

Control Methods

- Grass Carp
- Flumioxazin or Fluridone

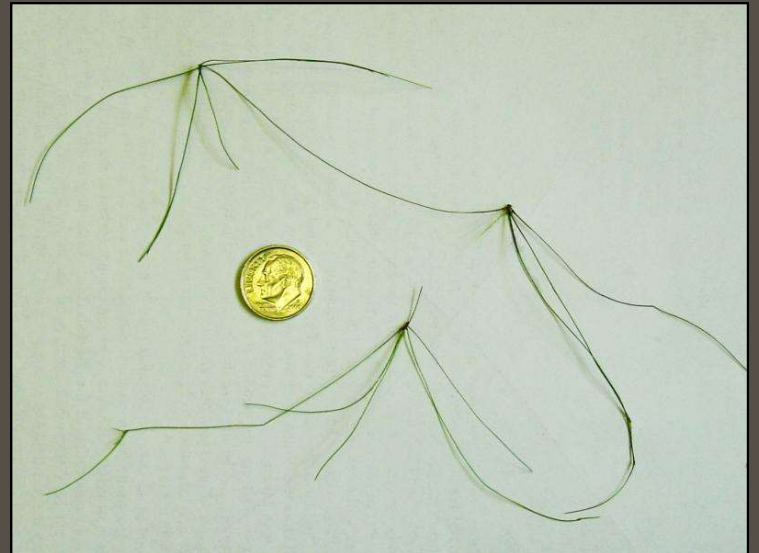


Slender Spikerush

- Leaves are tubular, fine, and needle-like
- Roots in shallow water, clumps can break free and disperse in deeper areas

Control Methods

- Grass Carp
- Flumioxazin or Fluridone (Good ratings)



Grass Carp Stocking

- Early spring is a great time to stock Grass Carp
- Head-start on controlling aquatic vegetation
- Grass Carp will consume vegetation as it grows



Proactive Steps to Maintain Healthy Water Quality

- **Do a water test**
 - Make sure to do the one that includes alkalinity (W-34C)
 - Lime may be needed
- **Test secchi depth**
 - Determine whether fertilizer is needed or if there is a eutrophication problem

Results

pH: 6.55 (Desired pH range 6.5 to 8.5)

Calculated Hardness: 4 ppm

(Water hardness is due to the presence of certain dissolved minerals, primarily calcium and magnesium.)

Parameter	Concentration in Sample
Alkalinity	6 ppm
Aluminum (Al)	negligible
Boron (B)	negligible
Calcium (Ca)	0.7 ppm
Carbon Dioxide (CO ₂)	3.34 ppm
Chromium (Cr)	negligible
Copper (Cu)	negligible
Iron (Fe)	0.19 ppm
Magnesium (Mg)	0.4 ppm
Manganese (Mn)	negligible
Molybdenum (Mo)	negligible
Nickel (Ni)	negligible
Phosphorus (P)	negligible
Potassium (K)	1.7 ppm

Parameter	Concentration in Sample
Silica (SiO ₂)	1.24 ppm
Sodium (Na)	1.1 ppm
Zinc (Zn)	negligible

ppm: Stands for parts per million. One part per million is equivalent to 1 pound of an element dissolved in 1,000,000 pounds of water. One part per million is the same as one milligram per liter (mg/L).

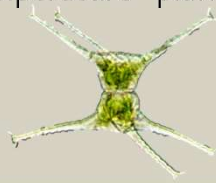
ppb: Stands for parts per billion. One part per billion is the same as one microgram per liter (µg/L).

Comments are listed on the next page.

Ecology of a Pond Ecosystem

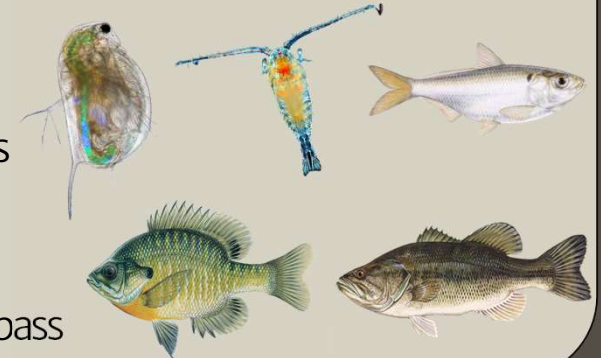
Primary producers

- light + nutrients + optimal temperature = plants
- Phytoplankton “bloom”
- Filamentous algae
- Macrophytes



Consumers (fish and other things)

- Shad
- Zooplankton
- Invertebrates
- Grass carp
- Sunfish
- Largemouth bass



Pond carrying capacity for fish

- Maximum sustainable density
- 40 – 400 lbs per acre.

Alkalinity and Hardness

- Maintain above 20 ppm
- Maintains stable pH
 - Helps maintain healthy fish and primary producers
- Ponds may need lime to neutralize acidic soils

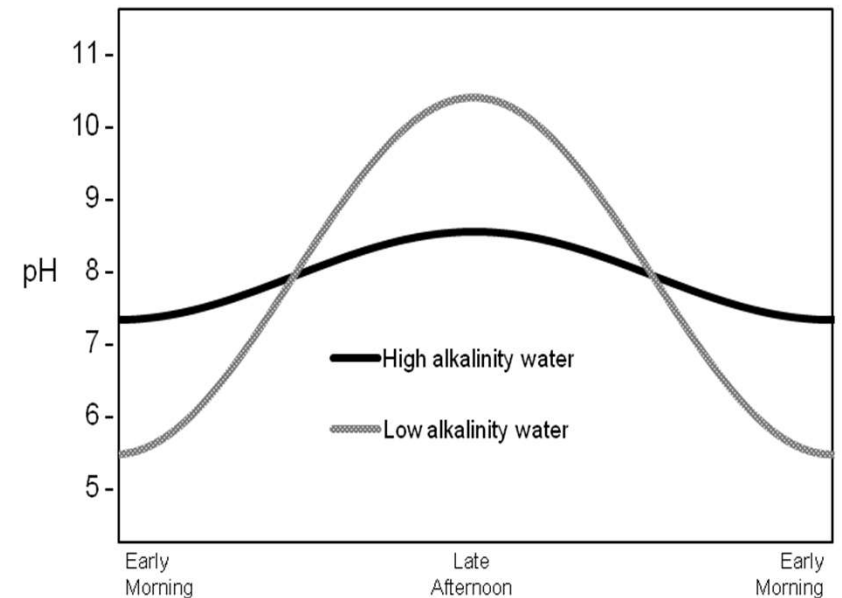
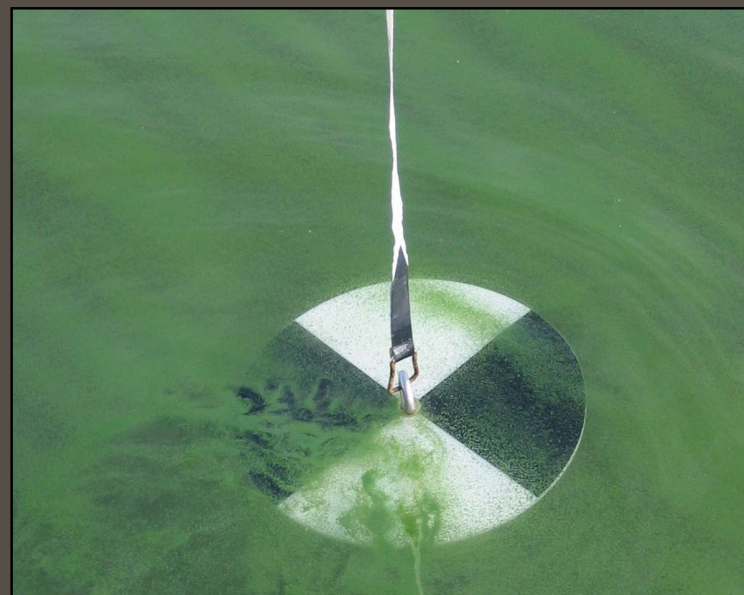


Fig. 1. Changes in pH during a 24-hour period in waters of high and low total alkalinities (Wurts and Durborow, 1992).

• SRAC 4100: Liming Ponds for Aquaculture

Fertilization

- Can be used to boost primary productivity
- Spring is the time to start fertilizing if needed
- Feeding is a form of fertilization!
- Simple check using secchi depth
- Be careful with aquatic weeds



Secchi Depth	Fertilizer Recommendation
24 inches or greater	Fertilize
18–24 inches	No Action
18 inches or less	Dense Bloom. Watch.

Muddy Ponds

- **Often a result of erosion around pond edge or in watershed**
 - Aquatic vegetation buffer
 - Vegetation in watershed
- **Test Alkalinity and Hardness for lime requirement**
 - Muddy ponds also often have low alkalinity and hardness
- **Lime will bind with clay particles to reduce turbidity**



Early Spring Fish Kills “The Spring Crud”

- **Fish have been less active all winter**
 - Nutritionally and immune compromised
- **Water temperatures rising**
- **Sudden increase in metabolism causes stress**
- **Can result in low levels of mortality**
- **Corrects itself**



Early Spring Fish Kills “The Spring Crud”

- Landowners should keep watch to make sure mortality does not continue
- Recommend a water test to make sure water quality is healthy
- Look for other issues that may arise in the future



High Rainfall and High Flows

- Making sure drain structures are in good shape
- Siphon systems and spillways free of obstructions
- Beaver activity

