Proactive Steps for Maintaining a Healthy Pond Year-Round

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Jay Shelton
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
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
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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Concentration in Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkalinity</td>
<td>6 ppm</td>
</tr>
<tr>
<td>Aluminum (Al)</td>
<td>negligible</td>
</tr>
<tr>
<td>Boron (B)</td>
<td>negligible</td>
</tr>
<tr>
<td>Calcium (Ca)</td>
<td>0.7 ppm</td>
</tr>
<tr>
<td>Carbon Dioxide (CO₂)</td>
<td>3.34 ppm</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>negligible</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>negligible</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>0.19 ppm</td>
</tr>
<tr>
<td>Magnesium (Mg)</td>
<td>0.4 ppm</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>negligible</td>
</tr>
<tr>
<td>Molybdenum (Mo)</td>
<td>negligible</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>negligible</td>
</tr>
<tr>
<td>Phosphorus (P)</td>
<td>negligible</td>
</tr>
<tr>
<td>Potassium (K)</td>
<td>1.7 ppm</td>
</tr>
</tbody>
</table>

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 alkalinites (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

<table>
<thead>
<tr>
<th>Secchi Depth</th>
<th>Fertilizer Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 inches or greater</td>
<td>Fertilize</td>
</tr>
<tr>
<td>18–24 inches</td>
<td>No Action</td>
</tr>
<tr>
<td>18 inches or less</td>
<td>Dense Bloom. Watch.</td>
</tr>
</tbody>
</table>
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
Questions?

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