Waterbody Aeration

FRANKLIN CONSERVATION COMMISSION BREEKA LI GOODLANDER, CWS, CONSERVATION AGENT AUGUST 4, 2022

"Older ponds can't retain as much Dissolved Oxygen and often need assistance." – Solitude Lake Management (SLM)

Types of Aerators & their Potential Ecological Benefits (SLM)

- Floating fountains (Electric)
 - Ideal for shallow waterbodies, depths above 4 to 6 feet
 - Increases dissolved oxygen (DO) levels in the top layer of the pond
 - Helps prevent stagnant water
- Surface aerators (Electric)
 - Ideal for shallow waterbodies, depths above 4 to 6 feet
 - Increases DO levels throughout the water column
 - Moves more water volume than fountains
 - 1 liter floating aerator moves 380 gallons/minute
 - 1 liter surface aerator moves 1,000 gallons/minute
 - Helps prevent stagnant water
 - Circulates the water column without bottom turbulence
- Submersed aerators (Electric)
 - Ideal for deeper waterbodies, depths more than 4 to 6 feet
 - Increases DO level throughout the waterbody via vertical mixing
 - Increases water clarity
 - Helps reduce the accumulation of bottom sediment (Natural to a point BG)
 - Helps prevent water from freezing in the winter (Natural-BG)
 - Can be customized based on waterbody size
- Solar aeration solutions









Circulation versus Oxygenation Systems (SLM)

- Moving water versus introducing oxygen
- Circulation = fountains, surface aerators, and submersed aerators
- Oxygenation = nanobubbles, direct oxygenation



"The system type depends on size, depth, shape, goals, and budget." – Solitude Lake Management (SLM)

Applicable Ecological Benefits?

- DelCarte Probably not...
 - Already being treated; high movement of water; DO is on par per SLM
 - "If it's not broken, don't fix it"; functioning natural ecosystem
 - Too much aeration can lower DO > hyperactive (stressed, tired) fish > higher spread of diseases and parasites
 - Small amount of gas in your fuel tank
 - Gas has to be maintained a certain level otherwise you will not be able to put the cap back on the tank. Similar to oxygen in water. Too much oxygen can get trapped under the water's surface and cause suffocation. (Need free movement)
 - "Anoxia"; wetlands are anaerobic ecosystems
 - Vegetation root damage, yellow and blackened leaves due to oxygen depletion caused by excessive aeration
- Sculpture Garden Likely...
 - Aeration can aid decomposition of plant material, decaying debris > less toxins released (natural process) > less algae growth
 - Usually ponds that have high amounts of algae, high heat, and wind exposure are not properly aerated
 - Eutrophication; altered

Other areas?