

Water Quality in Ponds

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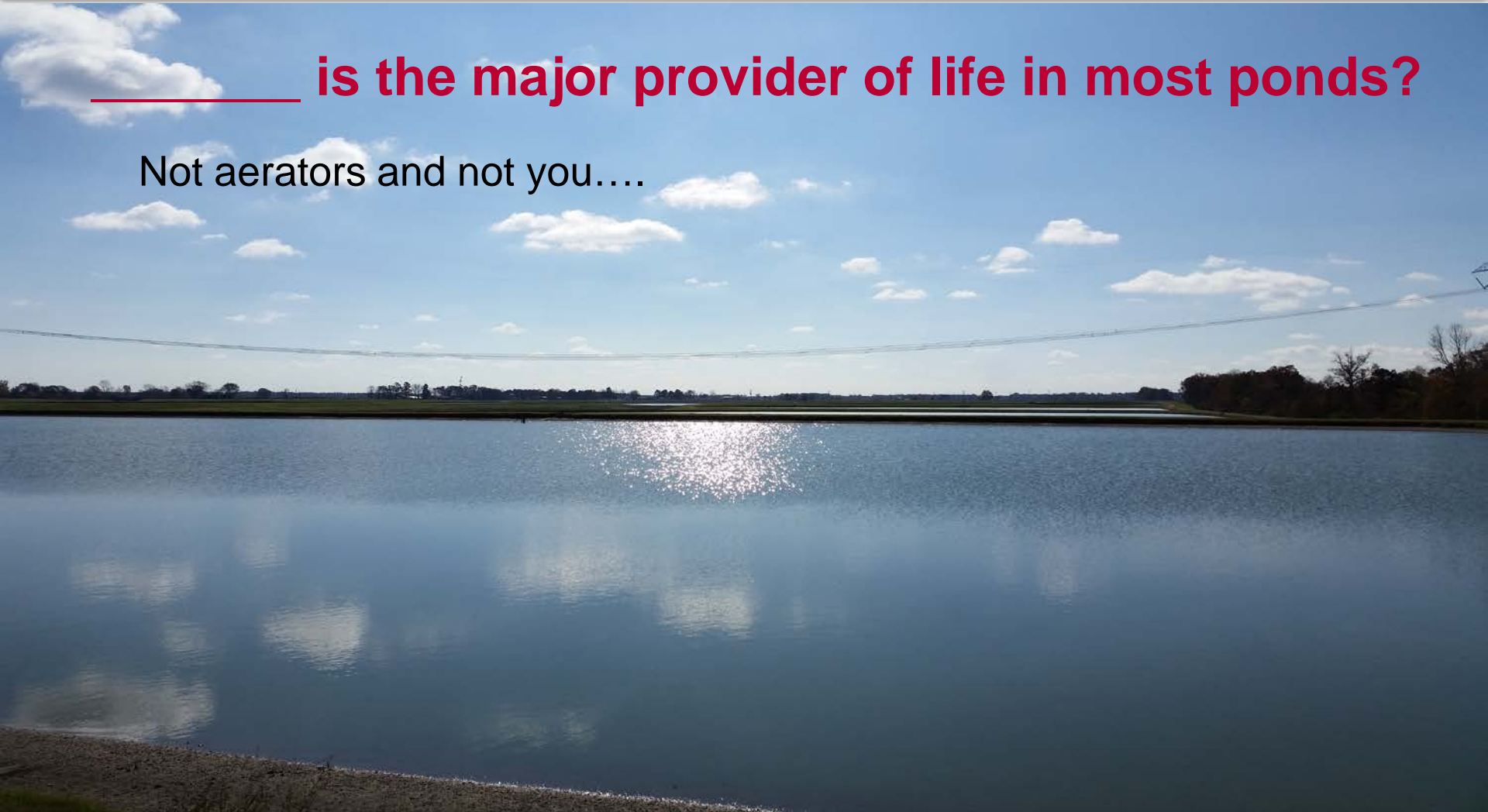


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_____ is the major provider of life in most ponds?

Not aerators and not you....



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Plankton!

- Phytoplankton provides the bulk of the oxygen throughout the day
- Aeration should be used to supplement plankton production
- Don't run your aerator 24/7 unless necessary! Increases costs substantially
- As mentioned earlier... parameters are often intertwined so measure them frequently!



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How to Recognize Low DO

- Fish will “pipe” at the top of the water; why?
 - Often will dive when you approach
- Bigger fish will die sooner than small fish; why?
- In a pond with multiple species, all fish are likely to suffer
- Low DO can often be predicted and limited/eliminated
 - Keep good records!
- The cause of low DO → Everything under the sun
 - Extended periods of cloudy days; why?
 - Organic matter decomposing; why?
 - Hot &/or stormy weather; why?
 - Lots of aquatic plants



Limiting Low DO

- Test your DO concentration daily
 - more if needed
- Keep your eye on the weather
- Be ready for during storms
 - Pond turnovers and power outages
- Feed appropriately
- Be careful with herbicides
- Prevent too many aquatic weeds
- Have aerators in place and use them
 - Bottom bubblers in this region common



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Pond Dyes

- Learning many ponds are fertile enough here
 - Many people use pond dye to limit excess nutrients (plankton growth)
- Blue dye is by far the most common
- Most of your pond stocking companies will sell it
- Adds great color to ponds that want to be very aesthetically pleasing



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Other parameters that may need to be measured

If you read something in milligrams per liter (mg/L) or in parts per million (ppm) that means the same thing!

- **DO (early!)**
- **pH**
- **Temp**
- **Total ammonia-nitrogen**
- **Nitrite**
- **Secchi**
- **Chloride**
- **Alkalinity**
- **Carbon dioxide**
- **Hardness**
- **Iron**
- **Hydrogen sulfide**



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How often?

You need to answer some questions first...

- Are you just doing this part time as part of a retirement?
- Is this a hobby?
- What kind of density do you have in your ponds?
- Can you risk losing the entire pond?
- How much capital do you have available?

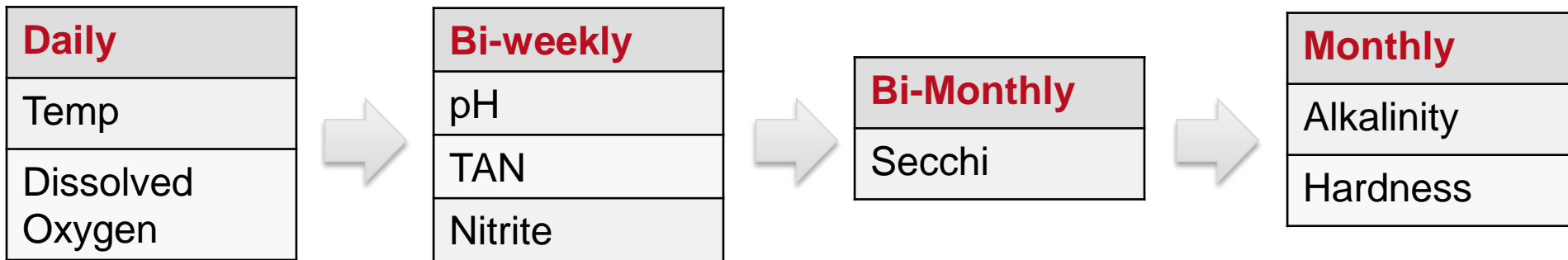


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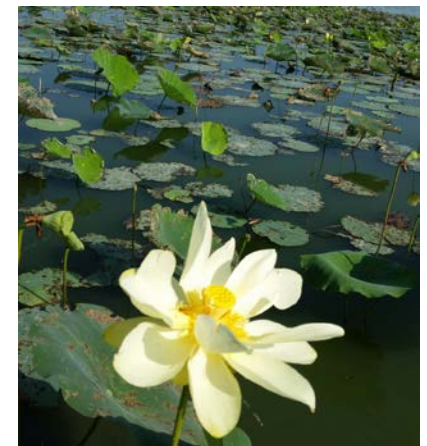
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How often?

If you're running this as a business there needs to be dedication.



There are exceptions to everything. Secchi may not play a role if a pond is heavily dyed & TAN and nitrite may need to be checked daily when levels are high



Why secchi, alkalinity, and hardness?

These tend to change more slowly in pond settings.

- Secchi – Determines how clear the water is in a pond
- Alkalinity – ***Necessary for proper pH buffer***
- Hardness – A measure of magnesium and calcium concentrations
 - Necessary for fertilizer rates



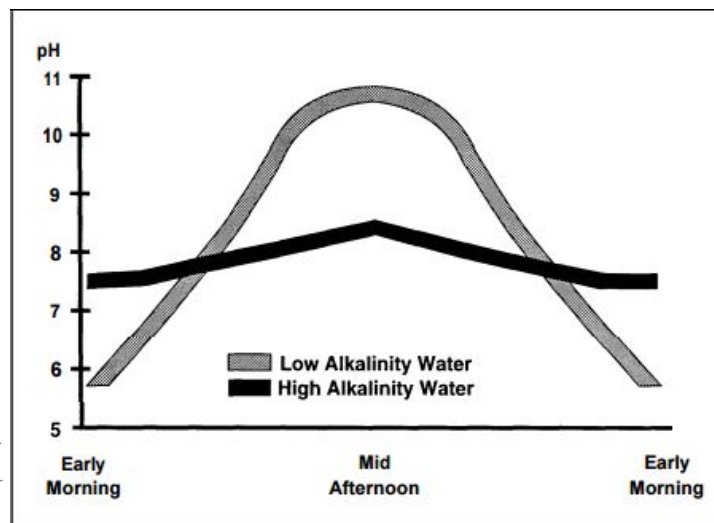
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Low alkalinity?

Appears to be less common around here but just in case...

- Ounce of prevention is worth more than a pound of the cure
- Get your soil tested prior to filling or test water for alkalinity
- If low you can add Ag-Lime; not slaked, quick, or hydrated lime
- Not always a “cure all” but will likely help with strong pH swings



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Kits, meters, strips

Today we will learn how to calibrate a YSI DO meter and properly use the HACH FF-1A test kit.

- These are not cheap items. However, your livelihood is always an investment.
- If aquaculture is your main source of income then a high quality test kit and DO meter is imperative to your success.
- If your business is still in the small-scale beginning stage (hobby) then cheaper kits will likely work until you begin to feel more comfortable with water quality



Have a fish kill?

While bacteria, viruses, and parasites are a very real threat, most fish mortalities in aquaculture are due to poor water quality!

- Keep up with your records so that you can foresee troubles and prevent them from happening!
- If you aerate, test your parameters often, and keep good records then don't be too afraid of water quality problems!
- Your pond will let you know when it's had enough!



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Questions?

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