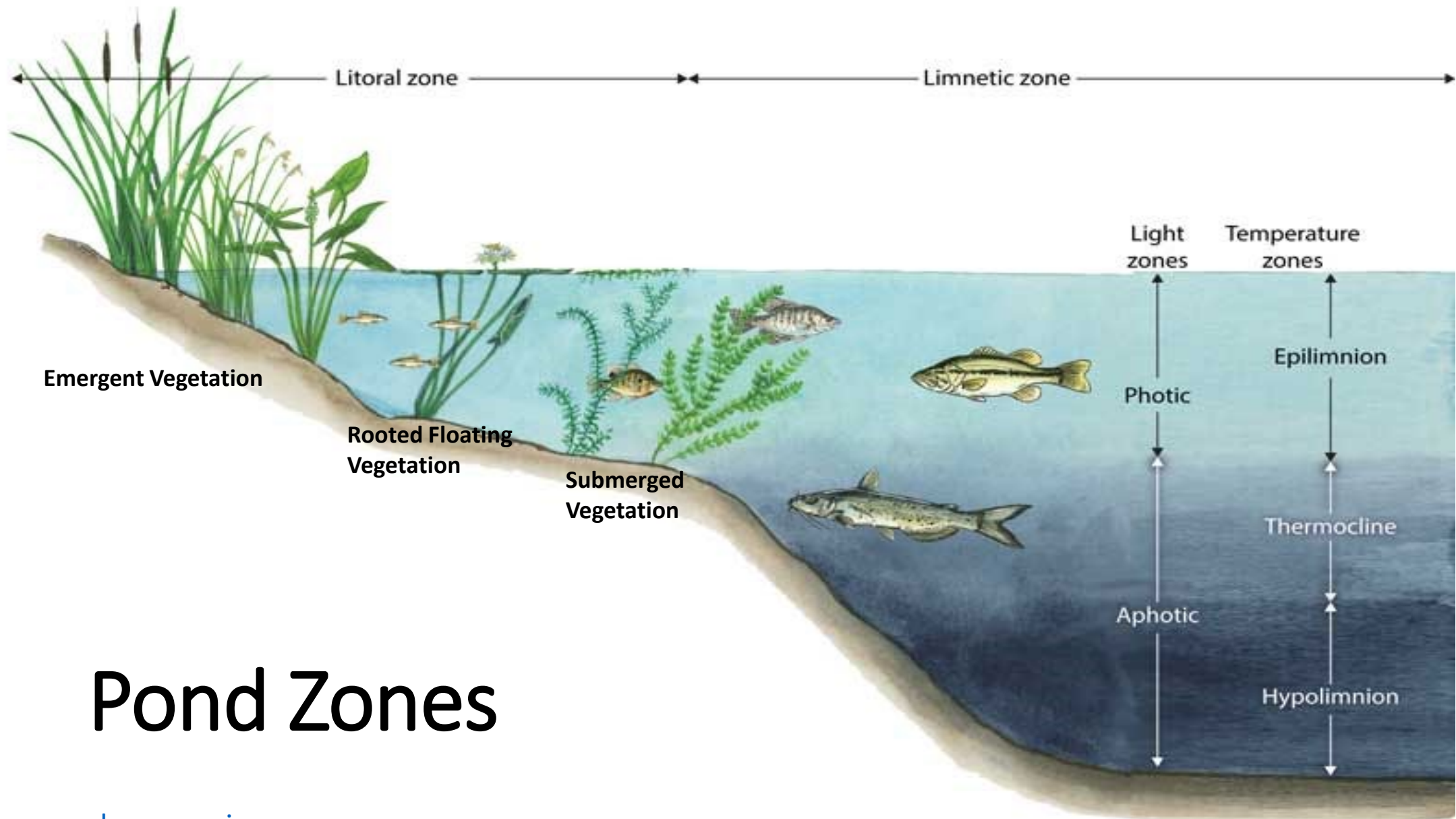


A photograph of a pond surrounded by dense green vegetation and trees. The water is calm and reflects the surrounding greenery. In the foreground, there are various plants, including yellow flowers and green stalks. The text "POND ECOLOGY 101" is overlaid in the center of the image in a bold, black, sans-serif font.

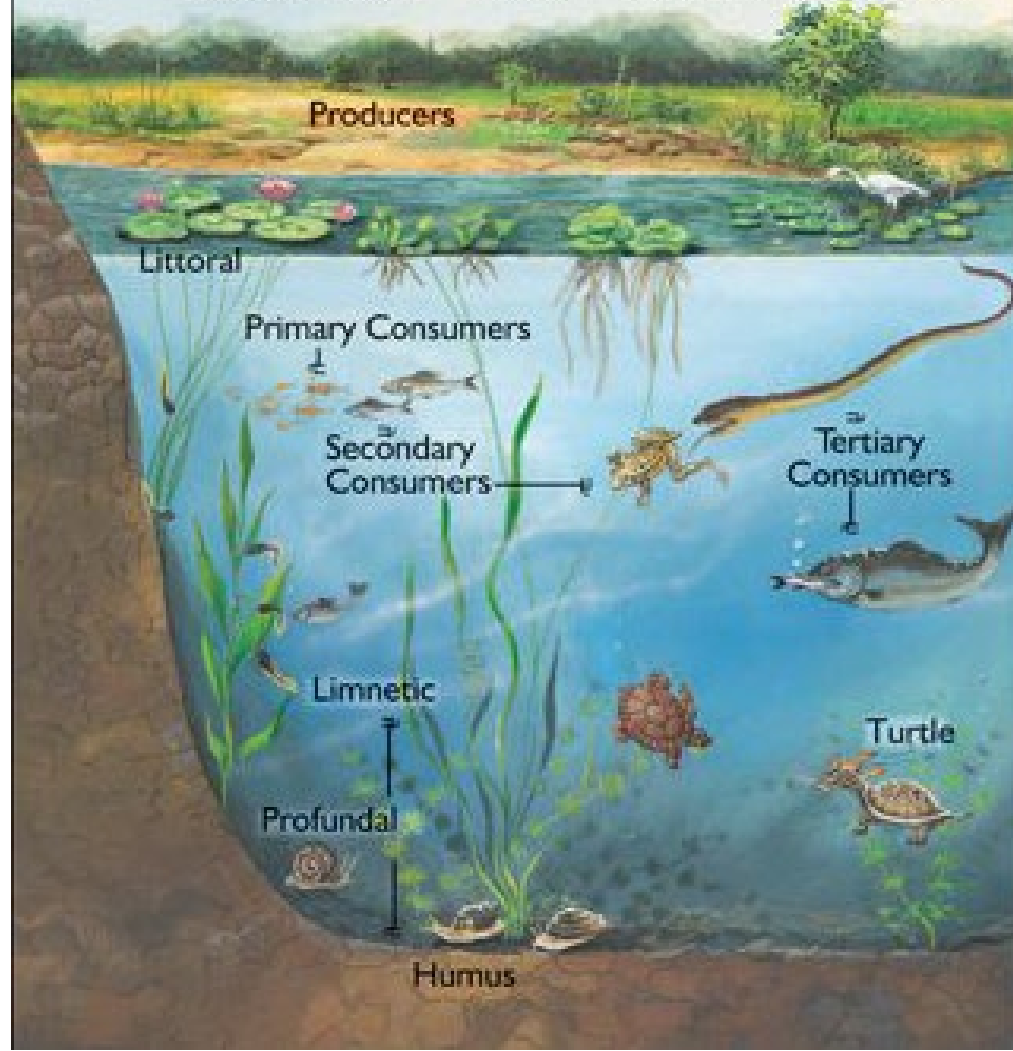
# POND ECOLOGY 101



# Pond Zones

# POND ECOSYSTEM

Biotic Factors				Abiotic Factors	
Producers	Consumers			Decomposers	
Algae	Primary	Secondary	Tertiary	Bacteria	Light
Hydrophytic Plants	Protozoa	Insects	Fishes	Fungi	Heat
	Crustacea	Larvae	Sharks	Microbes	Water
					Minerals



Producers

Littoral

Primary Consumers

Secondary Consumers

Tertiary Consumers

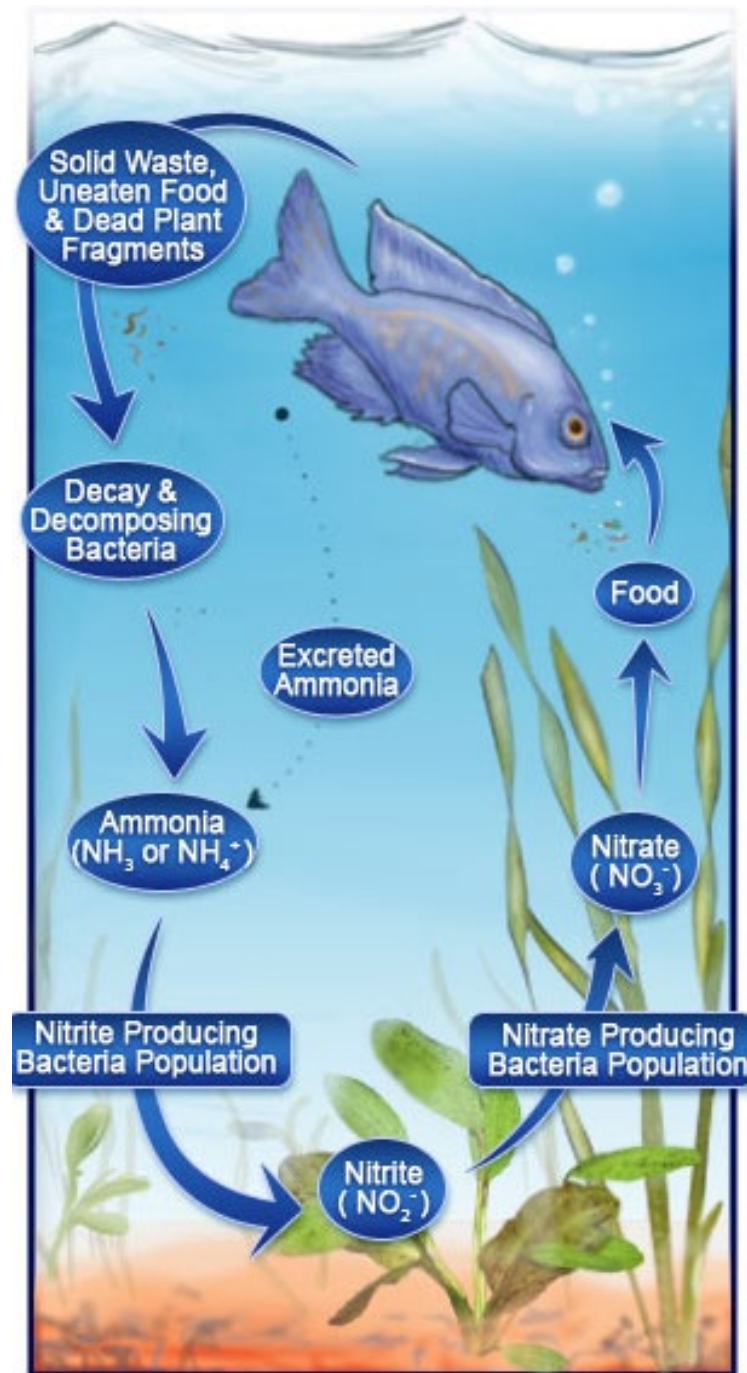
Limnetic

Turtle

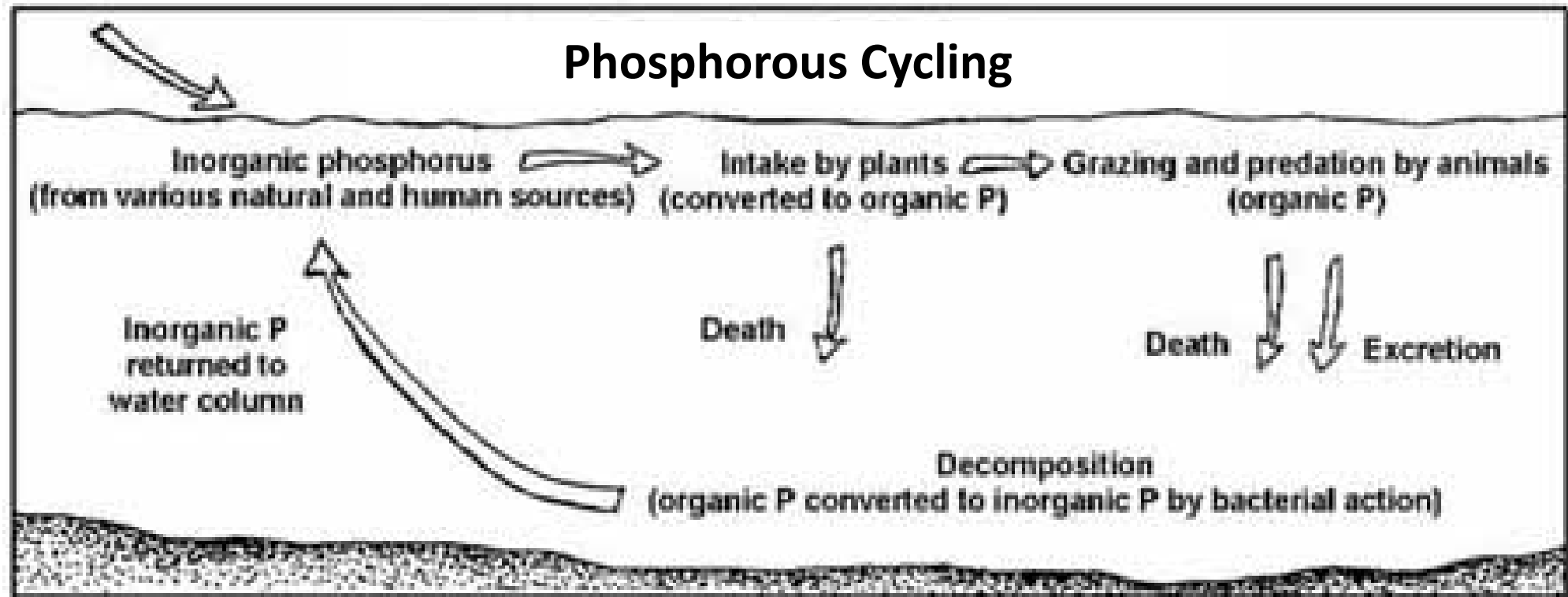
Profunda

Humus

# Nitrogen Cycling

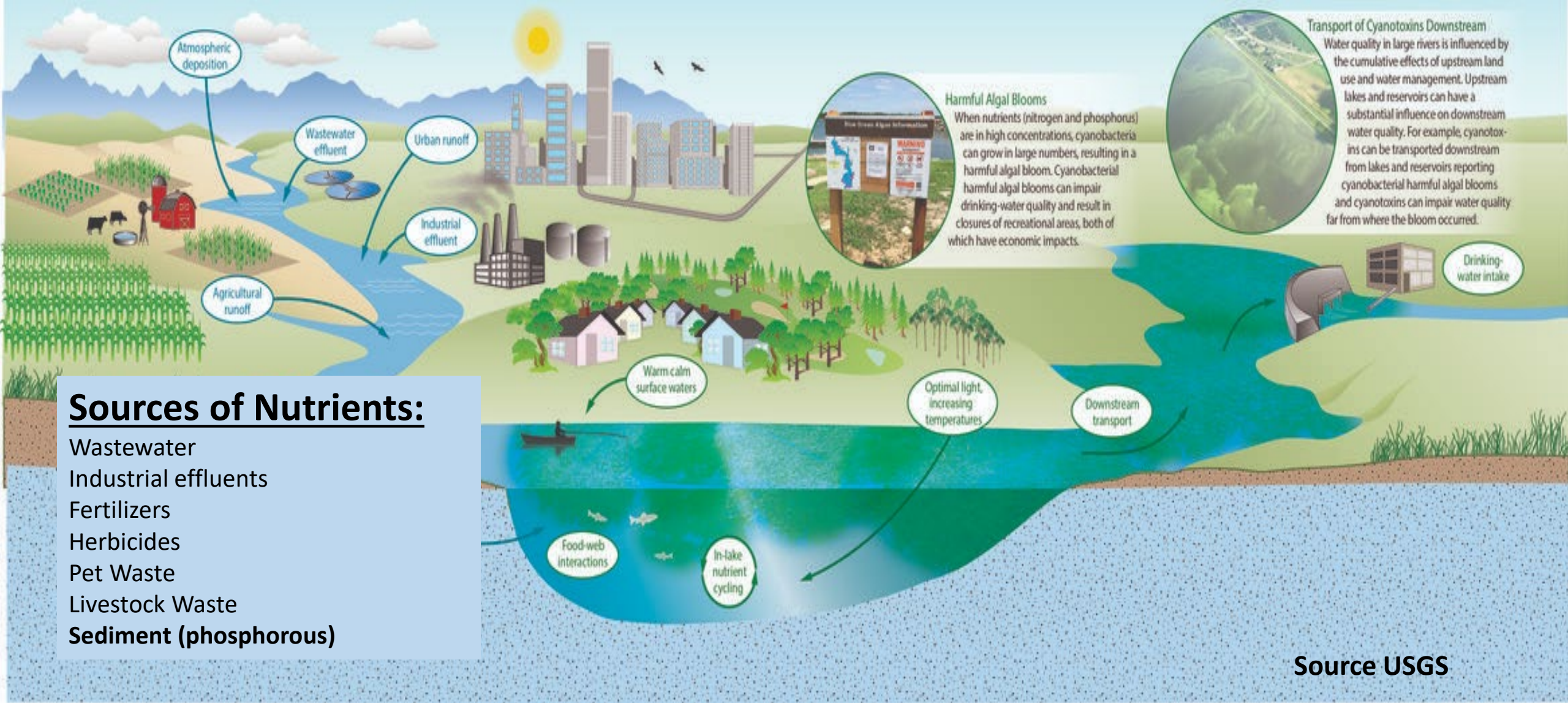


Source: Aquaprobiotics.com



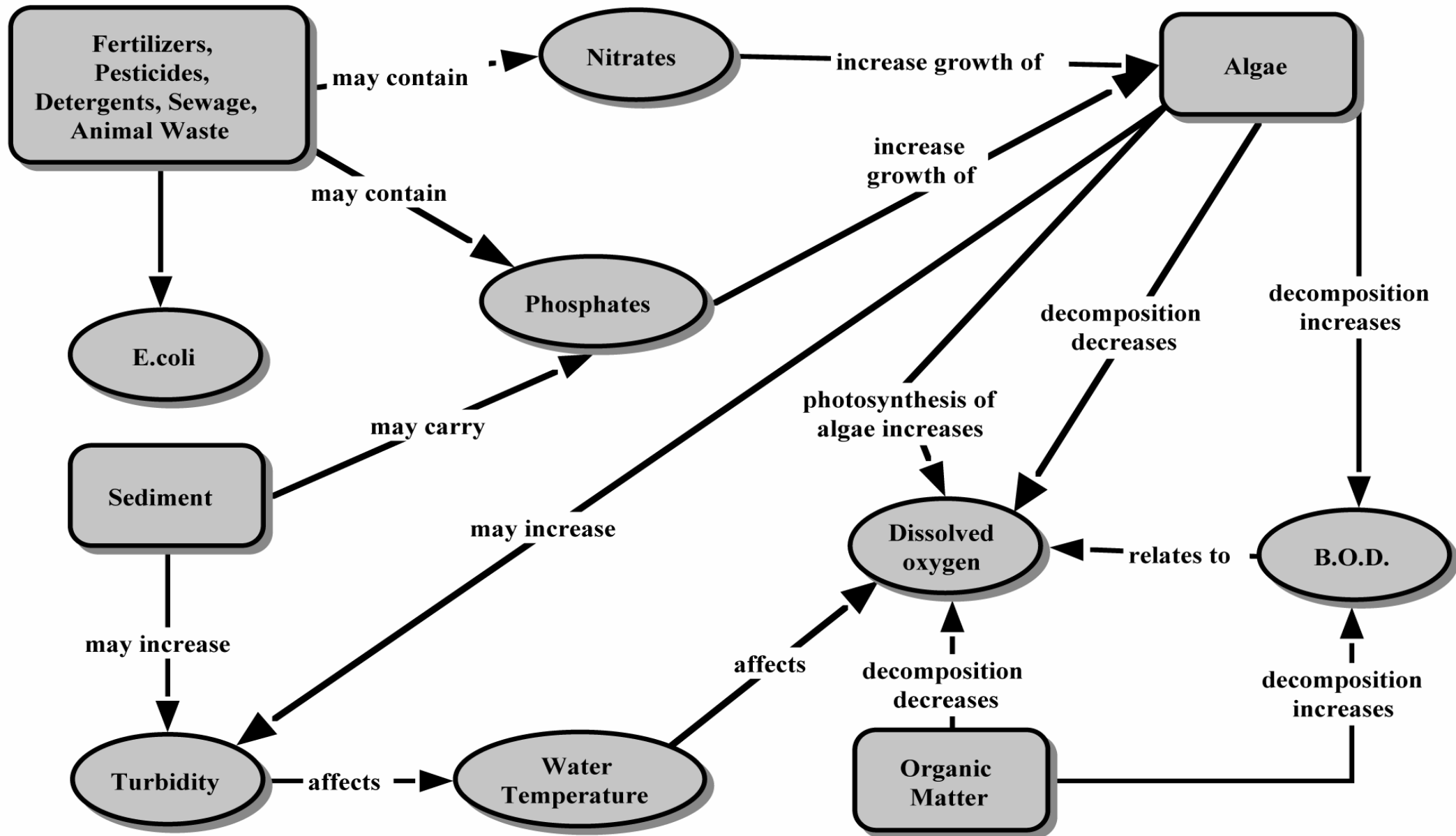
Source: Wikimedia

# Nutrients and Harmful Algal Blooms



**Sources of Nutrients:**  
Wastewater  
Industrial effluents  
Fertilizers  
Herbicides  
Pet Waste  
Livestock Waste  
**Sediment (phosphorous)**

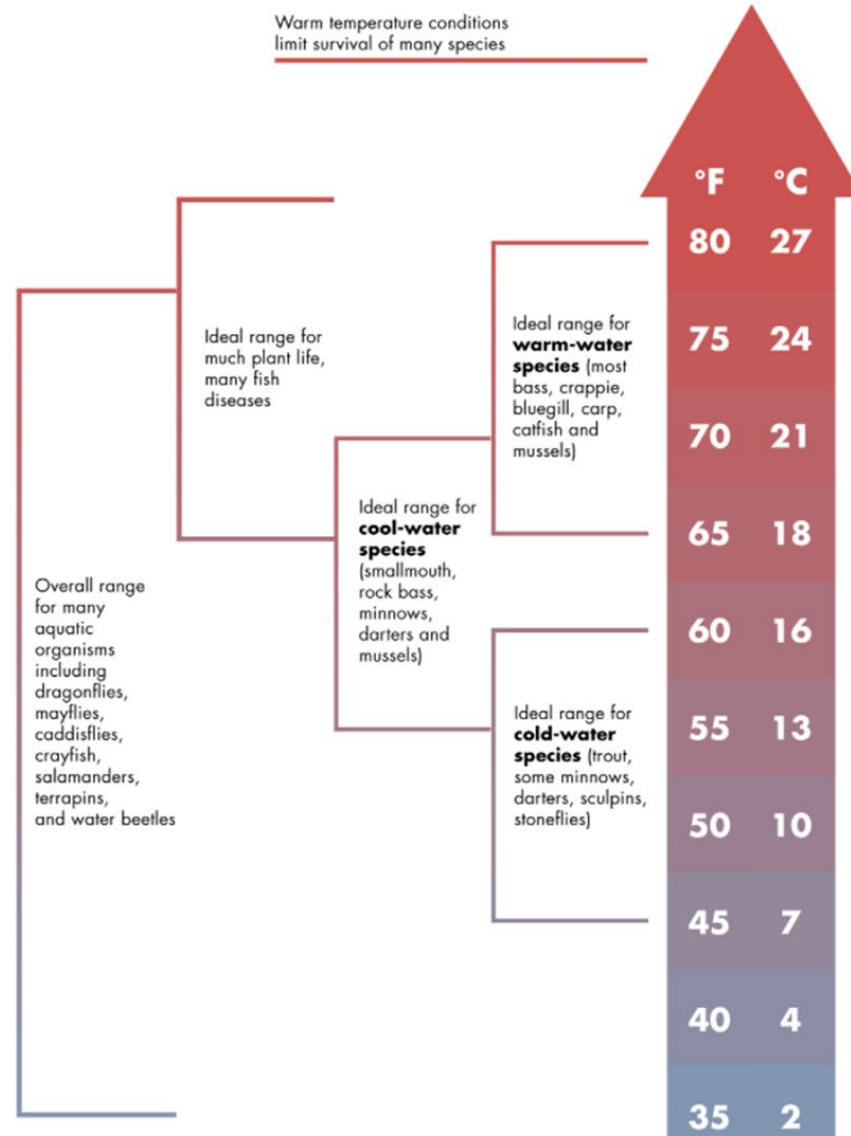




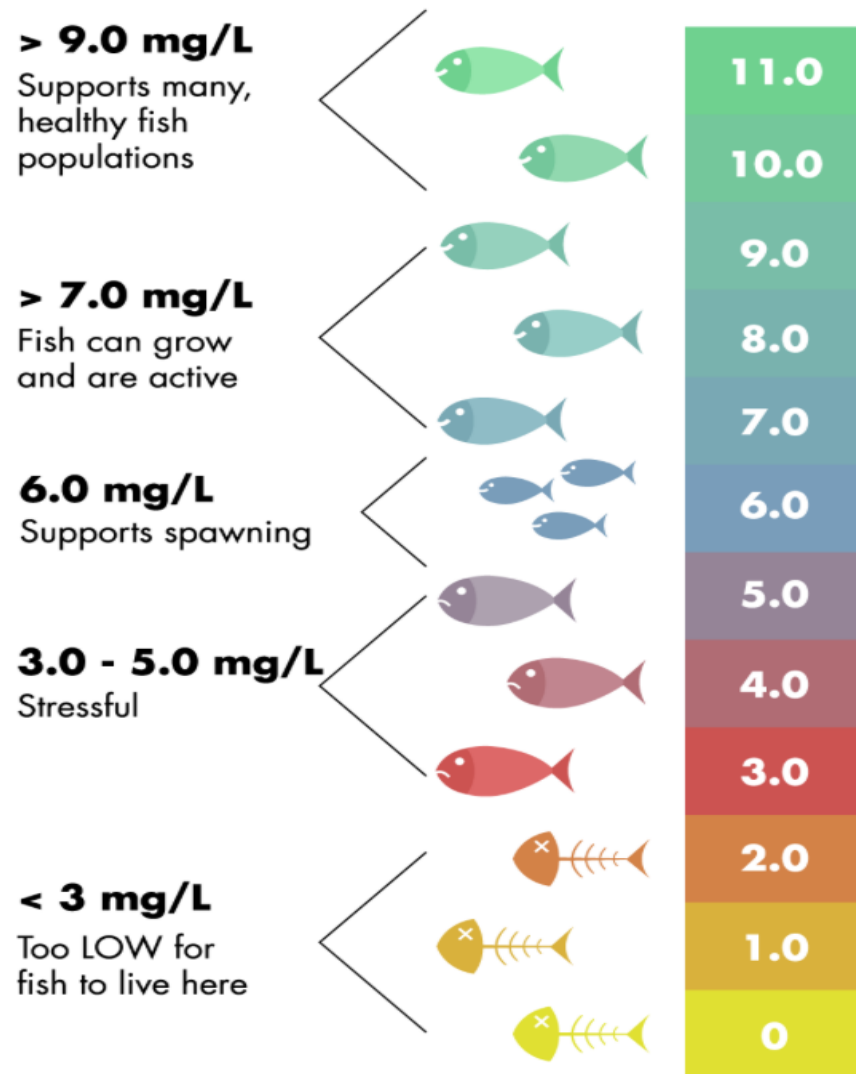
Source: Hoosier River Watch



# Water Temperature (°C)



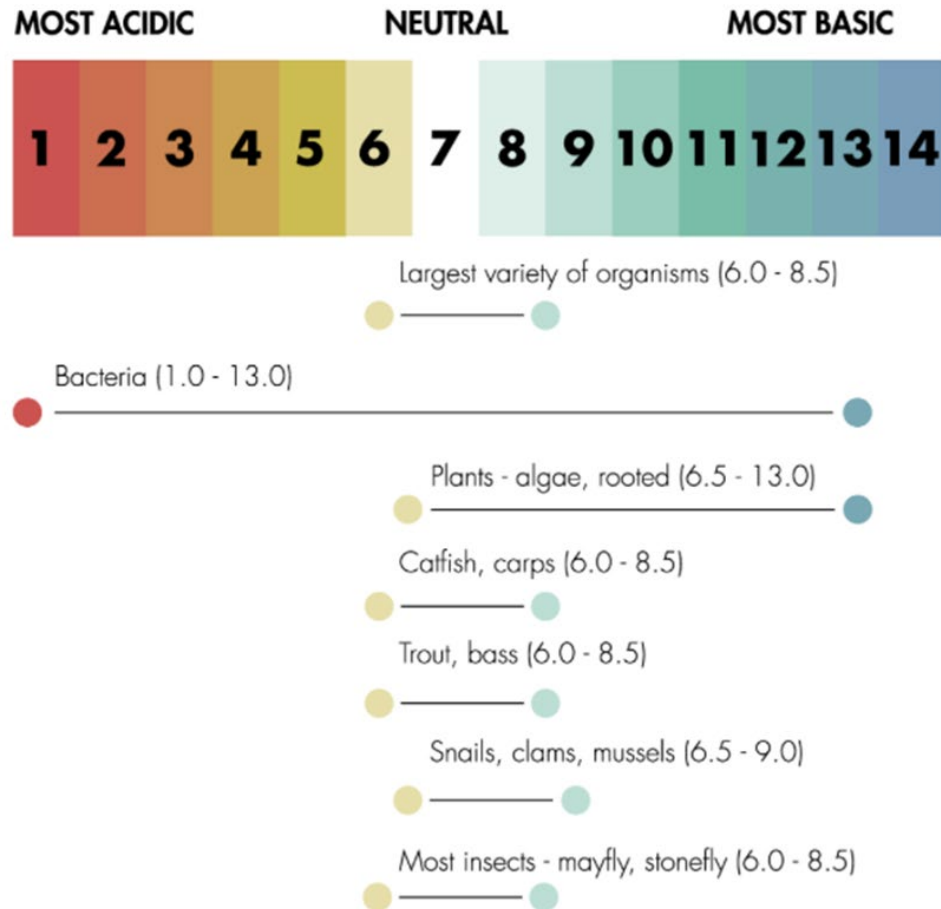
# Dissolved Oxygen - Concentration (mg/L)



- Oxygen levels can fluctuate throughout the day
- Decomposition of dead algae and other matter can cause drops in oxygen

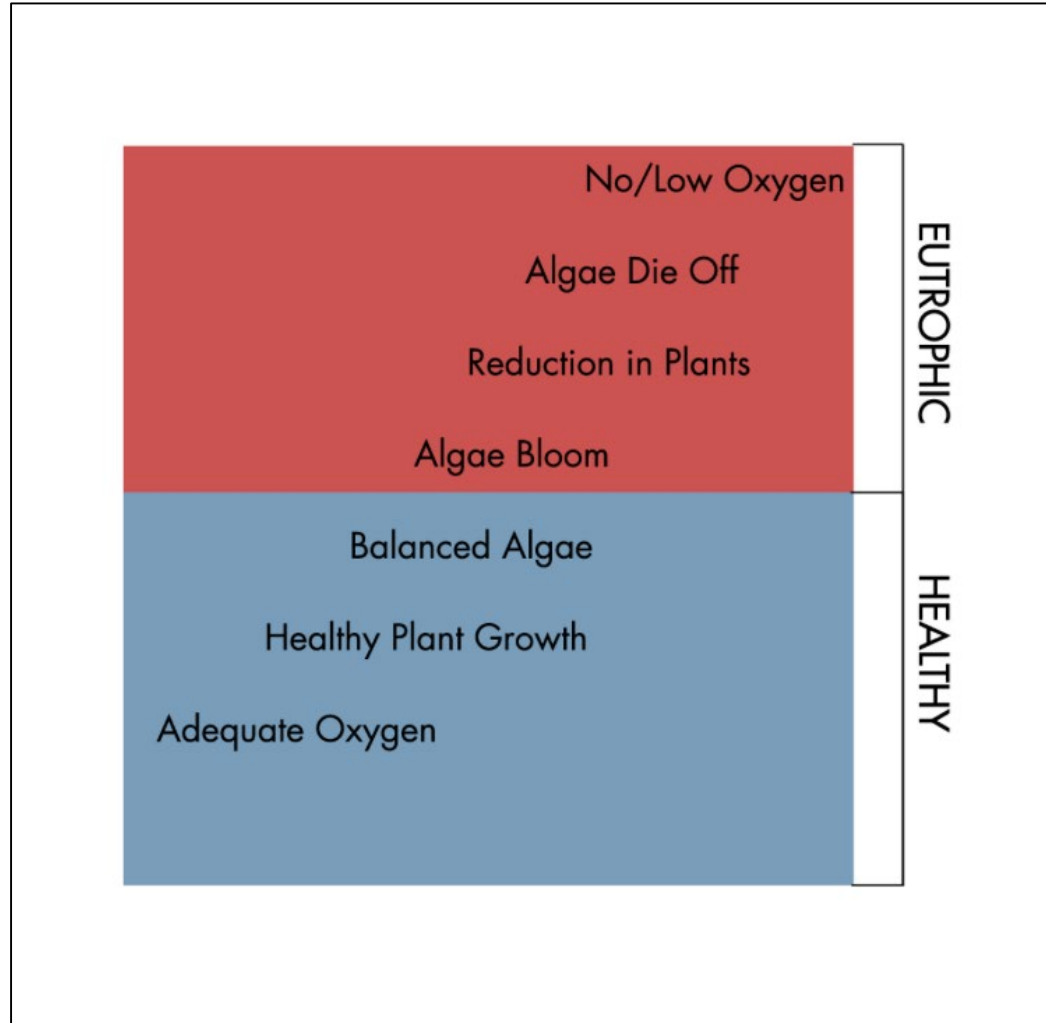


# pH (pH Units)



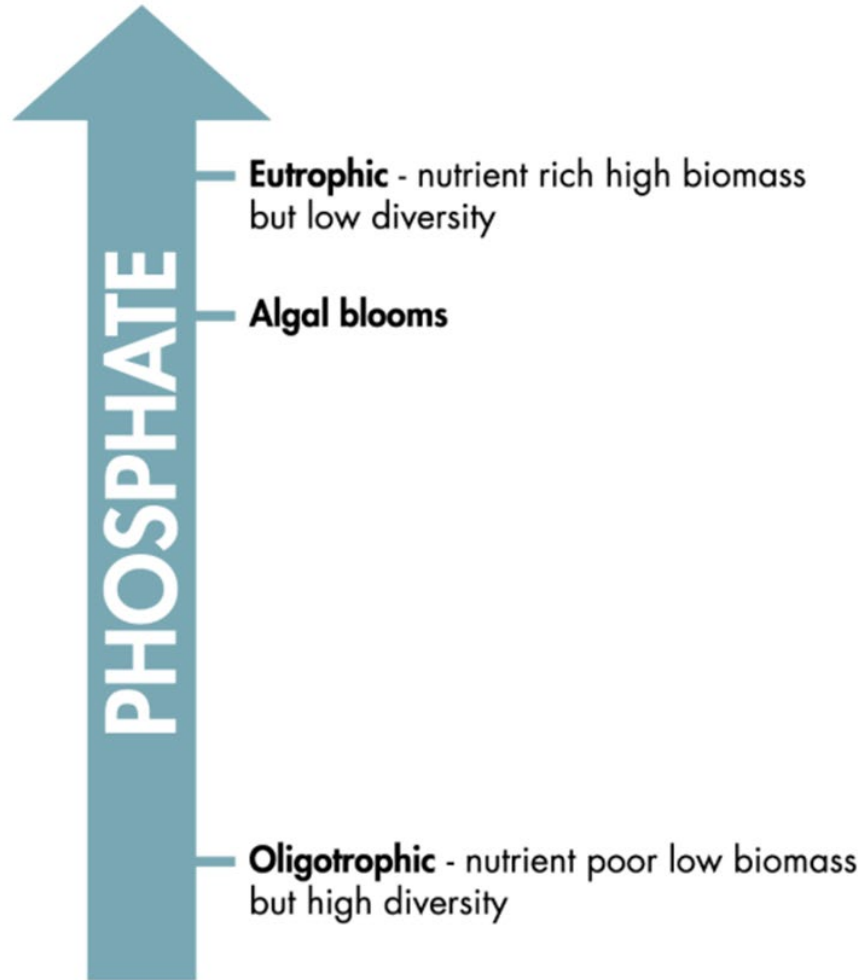
- pH scale is logarithmic
- pH can affect toxicity of other substances in the water
- Algae blooms can cause increases in pH

# Nitrogen



- **Ammonia** levels should be 0. Levels as low as **.1 mg/L** can be harmful to fish and aquatic life.
- **Nitrite** levels should also be around 0. Levels as low as **.25 mg/L** can be toxic to fish and aquatic life.
- **Nitrate** levels of more than **3 mg/L** can indicate nutrient pollution. For protection of aquatic life, levels should ideally remain below **5 mg/L**.

# Phosphates (mg/L)



*Phosphate levels in excess of 0.1 mg/L can cause excess algal or aquatic plant growth in a pond.*



API  
POND

Over  
500  
Tests

# POND MASTER TEST KIT

TESTS WIDE RANGE pH, AMMONIA,  
NITRITE & PHOSPHATE  
• Fast • Easy • Accurate

MESURE WIDE RANGE pH, AMMONIAQUE,  
NITRITES & PHOSPHATES  
• Rapide • Simple • Précis

Includes: 6 Test Bottles, Easy-to-Read Instructions,  
Glass Test Tubes & Color Chart

EN Instructions  
in English

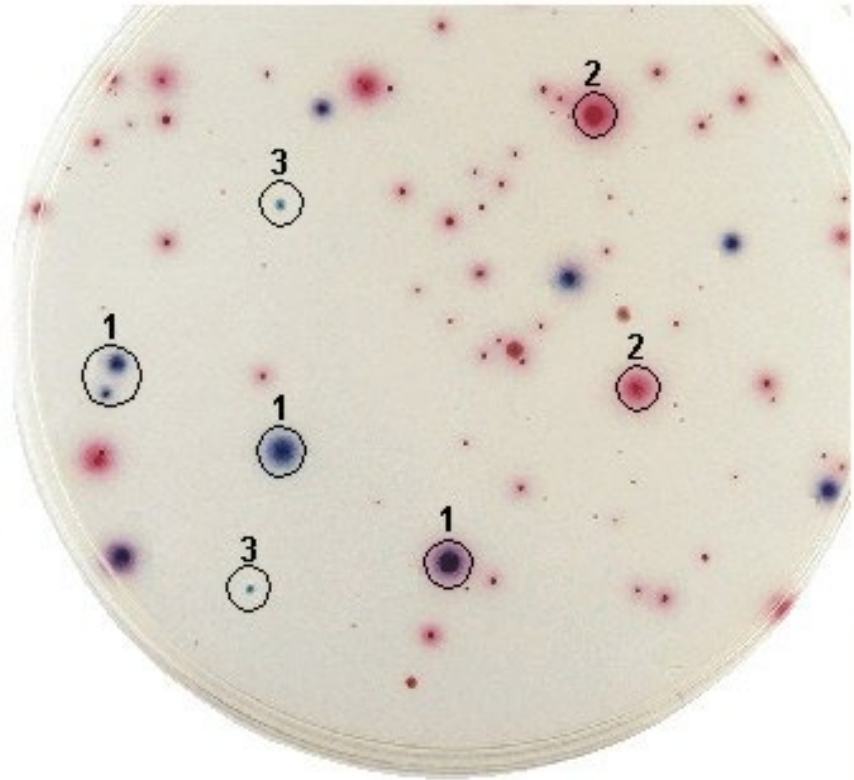
FR Instructions  
en français

ES Instrucciones  
en español

Regular  
Care

Water Problem  
Solving

GUIDE



## Coliscan® Easygel® Guide

Target organisms: *E. coli* and other coliforms

### Colony Color Guide:

1. *E. coli* (dark blue/purple)
2. Other Coliforms (pink/red)
3. Teal/Green colonies

Ponds and lakes used for swimming and other recreation should have less than **126** colonies of *E. coli* bacteria per 100 mL of water.





# Sampling Safety

**Assume HAB event if you observe:**

- Fish kills, dead livestock, critters or birds
- Surface water is discolored with surface scum (red, green or brown)
- Thick mats of algae on shoreline
- Smells bad



# Sampling Supplies

- Gloves
- Bucket with line
- Sample Bottles
- Safety glasses
- Waste disposal bottle for test chemicals
- Paper towels
- Access to clean water and soap after sampling



# Camp Ernst Lake

- Left onto Patrick Drive
- Left onto Camp Ernst Road
- Right into Parking Area
- Heather's Cell: 859-468-4539

