

# Fisheries Management- Ponds

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SOLITUDE  
LAKE MANAGEMENT

Restoring Balance. Enhancing Beauty.





- Pond construction
- Goals for your pond
- Fish species
- Management strategies
- Fisheries
- Habitat
- Common pond problems
- Questions

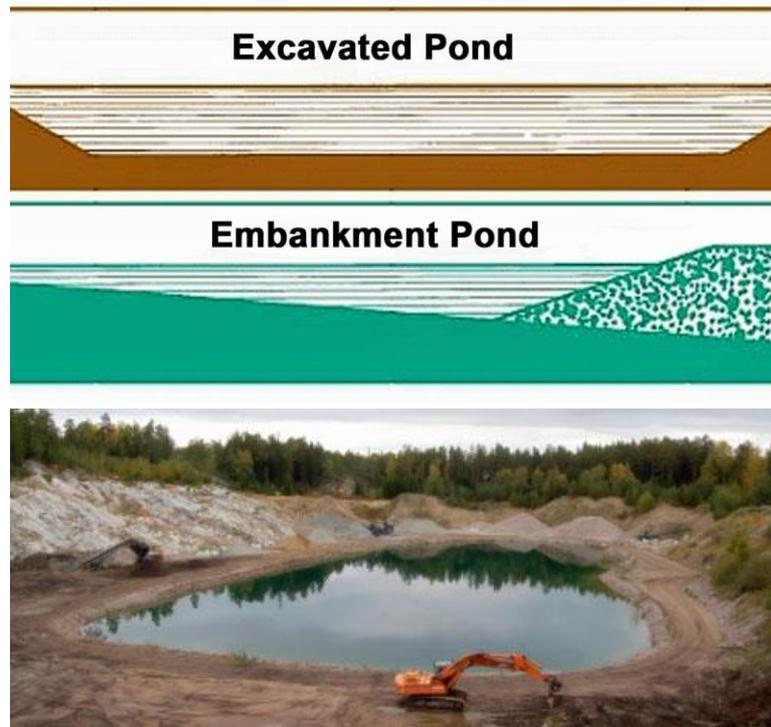


**Feel free to raise your hand and ask questions during the presentation**



## Types of Ponds

- Excavated
- Levee
- Embankment



**Consult with your local Soil and Water Conservation District Office and/or the Natural Resources Conservation Service**



- Depending on the site, watershed size, and the purpose of the pond, local, federal and state permits may be necessary for construction.
- Land-Disturbing Permit
- Stormwater Permit (Call 276-694-6094)
- Wetland and Stream Impacts (ACOE) and DEQ
- Dam Safety (DCR) Division of Dam Safety.
- Wildlife Impacts

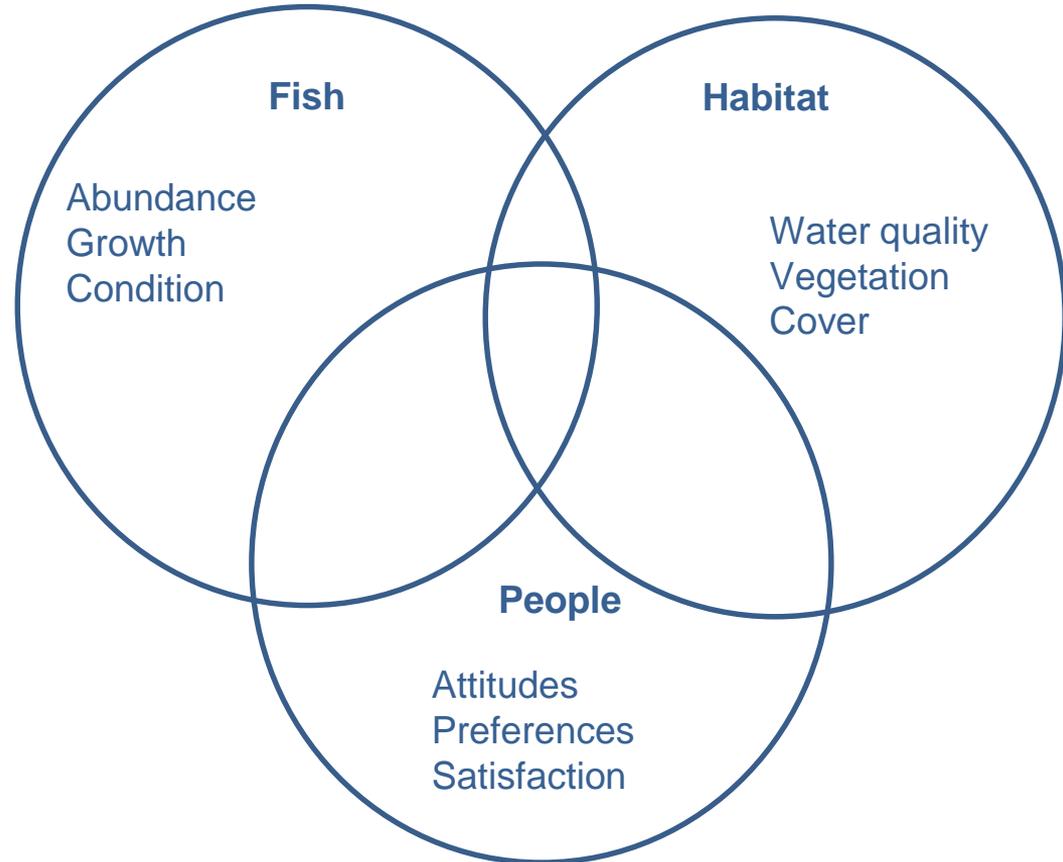
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# Pond/Fisheries Management Goals





Fisheries management is a challenging and exciting process of planning and taking actions to manipulate fish populations, habitat, and people to achieve specific human objectives.



# Desirable Fish Species



# Undesirable Fish Species





Effective fisheries management improves when data about the pond drives decisions





## Effective fisheries management requires planning and patience

- Stocking
- Predator-to-Prey Management
- Species Management
- Supplemental Feeding
- Habitat Management
- Water quality
- Productivity



# Stocking New Ponds - Fingerlings



Species	Number/acre	Length (inches)	Time
Bluegill	350	1	Fall
Redear Sunfish	150	1	Fall
Channel Catfish	50	2	Fall
Largemouth Bass	50	2	Following spring
Largemouth Bass	50	2	Following spring

# Stocking New Ponds - Adults



Species	Number/acre	Length (inches)	Time
Bluegill	100	≥ 3	Spring
Redear Sunfish	25	≥ 3	Spring
Channel Catfish	20	12	Spring
Largemouth Bass	20	12	Spring
Golden Shiners	~5,000	4	Spring



- Proper species selection, rates, and sizes vary based on current fishery status
- Information from an electrofishing survey provides most accurate assessment
- Observations from angling can help
- Cannot blindly stock fish and expect improvements to fishery





- Annual assessments allow you to stay one step ahead of potential problems
- Innovative strategies for prevention:
  - Stocking female-only Largemouth Bass
  - Diversify predator population
    - Channel Catfish
    - Hybrid Striped Bass
    - Tiger Muskie





- Annual water temperatures help determine which predator species will best suit the waterbody.
- Once you have established what predator species are desired, focus on the forage base.
- The right forage species depends on water temperature, structure, water movement, predator species and future management techniques.





- Establishing a self-sustaining forage base is key to a successful fishery.
- Automatic feeders support forage base (trout and bass fisheries).
- Improved nutrition increases fish health and survival.
- Pellet fish feed is the most cost-effective fisheries management approach to growing big fish.
  - Approximately two pounds of quality fish feed will convert into one pound of fish growth.
- Increased catch rates (great for kids).





- All aspects of fish habitat are important and beneficial when it comes to fisheries management.
- From vegetation and cover to water quality, it's important to take every aspect of your aquatic ecosystem into consideration.





- Fish cover
- Aeration
- Aquatic vegetation
  - Manage for beneficial native plants
  - Control nuisance/invasive vegetation
- Water quality
  - Nutrient management
  - Fertilization, Phosphorus Control



# Beneficial Aquatic Plants



- Aquatic plants may be submersed, floating, or emergent, and native species are essential to a healthy aquatic habitat.
- Beneficial plant species help absorb excess nutrients already in the pond, reducing availability for unwanted plants and algae.
- Provide habitat, refuge, and food for a wide variety of organisms including fish, invertebrates, and waterfowl.





- Proactive testing and monitoring is vital when it comes to helping prevent water quality problems.
- Helps to document annual trends and acts as a reference for emerging water quality impairments.
- On-site water quality consultations may include information on the physical state of your water: water color and odor, algae presence, pH, temperature, dissolved oxygen, conductivity, and alkalinity.
- In the lab, a deeper examination, also measuring ammonia, nitrates, nitrites, phosphates, hardness, iron, salinity and conductivity can be performed.





- The bottom of the food chain is phytoplankton.
- Phytoplankton abundance is related to nutrients – N and P.
- Generally the more nutrients, the more productive the fishery.
- But, as water clarity is diminished, algal blooms and aquatic plants can become a nuisance, and fish kills are more likely.





- Aquatic plants and algae
- Toxic algae
- Excessive nutrients
- Erosion
- Fish kills
- Undesirable fish
- Poor fishing





- Invasive algae and aquatic weeds are not only unsightly, but they can sometimes be a danger to aquatic life and humans depending on the species.
- Properly identifying the target algae and aquatic weeds is an important factor in achieving the desired results.





- Harmful Algal Blooms (HABs) like blue-green algae can contain toxic cyanobacteria - and they are becoming more prevalent in our communities year after year.
- HABs can occur naturally, but have been a problem for decades due to the negative environmental impacts associated with mass urban development and pollution.
- Proactive Management is the best solution:
  - Correctly identify HABs
  - Regularly test water quality
  - Properly dispose of organic materials
  - Reduce excess nutrients
  - Introduce aeration
  - Restore your shoreline
  - Apply beneficial bacteria





## Sources of Nutrient Pollution

- As ponds age, they naturally become more productive
- Agricultural runoff
- Runoff from upstream of your property
- Lack of a buffer



## Potential Solutions

- Modify agricultural practices
- Establish a buffer around the pond
- Aeration
- Chemical removal of nutrients
- Dredging





## Identify factors that could increase likelihood:

- Low dissolved oxygen
- Water chemistry
- Chemical toxicants
- Parasites and disease
- Thermal stress



## Identify symptoms:

- <12" visibility due to phytoplankton or planktonic algae
- >50% of water volume is filamentous algae or aquatic vegetation
- Fish stop feeding
- Fish scatter when spooked
- Fish at the surface = DO
- Fish at the perimeter = Ammonia, pH, etc.



## Concerns

- Compete for food and/or habitat
- Predation
- Impact water quality or habitat
- Unintended introduction from stocking



## Solutions

- The larger the pond, the more difficult to eradicate
- The sooner the better
- Is the source upstream (little management control)
- Fish toxicants (restricted use)
- Removal – fish sampling/angling
- Stocking





## Observations

- Poor catch rates
- Poor size – small/skinny fish
- Want a different species



## Solutions

- Stocking blindly probably won't fix it
- Need data!
- Stunting – slow growth = harvest
- Poor reproduction
- Unbalanced predator-prey ratio
- Poor habitat
- Poor water quality
- Stocking
- Feeding





## Fisheries management in ponds can be complex and affected by a number of factors:

- Define goals
- What is the current status
- Plan – how do I achieve goals?
- Assess – did I get there?



# Please Share Your Takeaways

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