

Recreational Pond Management: How to improve sport fishing

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Ponds are built for some of the following purposes:

- Livestock watering
- Domestic uses
- Fire control
- Irrigation
- Recreation
- Aquaculture
- Aesthetics
- Flood control
- Borrow pits



Many ponds serve either single or multiple uses

- Not all uses are compatible!
- Prioritize uses
- Manage the pond accordingly



Primary pond uses may conflict with fish production! **Not all ponds will support fish!**



Site selection – Get Help!

- County Farm Services Office - soil maps and advice – it's free!
- Extension personnel – pond layouts, general features- it's free!
- Private excavators – Experience, references, cost estimates

Testing sub-soils

- 4 test borings per acre in limestone (karst) areas at dam site and if pond bottom soils are variable
- Avoid exposing rock formations
- Avoid sand seams

Amount of watershed in acres required for a 1 acre pond: Get Farm Services Office help!

Depends on:

Vegetation

Soil type

Rainfall

Slope

In general:

- Mostly pasture with heavy soils ~5:1
- Wooded land with sandy soil ~30:1
- Too much or not enough watershed should be avoided!

Floodplains

- Locate ponds above the 25 year flood plain
- Ponds located within the 100 year floodplain requires a permit from the Division of Water
- Dam heights exceeding 25 feet require and Army Corps permit

Proper clay content?

- At least 20% clay content
- Proper moisture
- Compact in 6 inch blankets



Clay content in soils

- Contain at least 20% clay
- Clay soils >40% clay
- Sandy clay 35-55% clay
- Silty clay 35-50%

Pond seepage

- Poor site selection
- Inadequate soils
- Improper soil compaction
- **Most difficult pond management related problem!**



Lined ponds – a very expensive option!



Proper dam construction

- Anti seep collar for drain
- Core trench
- Quality, packed clay around drain pipe
- 18 inches of freeboard



Pesticide free soils?

- Look for signs of insects and crawfish
- Know crop history
- Have soil tested
- Most pesticide contamination occurs in the top soils



Pond construction costs:

- \$2,000 - \$5,000 per acre depending on the site, weather and equipment used



Pans

- Build ponds of any size
- Tractor pulled or bulldozer assisted
- Can carry soil long distances
- \$.80-1.25 per cubic yard of earth moved



Bulldozers

- Used for clearing, saving and spreading topsoil
- Stump removal
- Constructing small ponds < 2 acres
- Use with sheep's foot roller for compaction
- \$60-100 per hour



Adding Agricultural Limestone

- To increase total alkalinity by adding Calcium Carbonate
- Best done before flooding!



Stabilize soils

- Establish grass cover on dam and slopes ASAP
- Do not allow woody vegetation on dam
- Provide a 50-100' grass buffer strip around pond



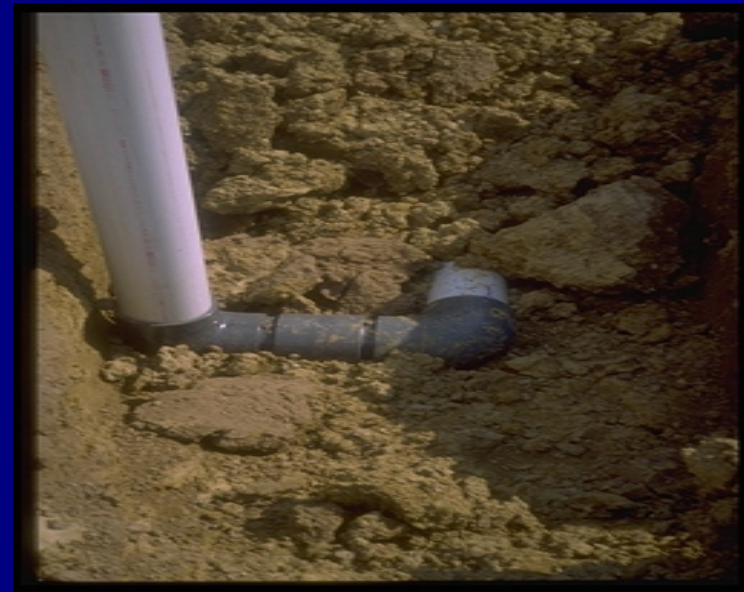
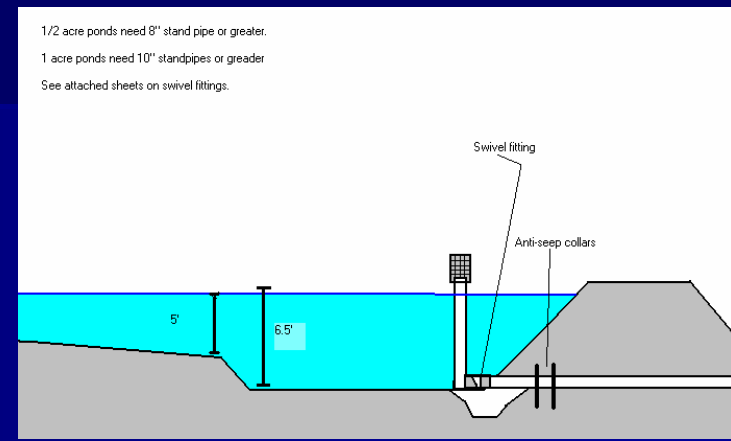
Emergency spillway

- Saves the dam and the pond!
- Usually located at the junction of the land and dam
- Don't screen the spillway – it's better to lose some fish!
- Grass spillways are more than adequate



Pond Drain

- A drain is a useful management tool
- Anti-seep collar installed around drain



Pond cost share ? – check with county Farm Service office

- Some cost share opportunities may be locally available
- Specifically where soil conservation may benefit
- Wetland mitigation from roads etc.
- Not generally provided for recreational ponds

Anti-seep collars

- Use one collar on each pipe in the center of the dam
- Keeps water from traveling along the outside of the dam
- Should radiate 2 feet out from the outside of the pipe



Lets improve fishing!



To establish good fishing: fish species you want!



Fish Stocking Rates and Times

- Bluegill fingerlings – 400 per acre during fall
- Channel catfish (optional) – 50 per acre during fall
- Red ear sunfish (optional) Stock 150 red ear and 250 bluegill fingerlings
- Largemouth bass – 120 per acre in May

Objective: to produce harvest size bluegill and largemouth bass

- Bluegill \geq 1/4 lb
- Largemouth Bass \geq 1 lb



Optional: red ear sunfish and channel catfish may be stocked

- Supplemental species – not needed to support bluegill and largemouth bass populations



Forage base

- Bluegill may spawn multiple times when water temperatures reach 80°F providing forage fish for largemouth bass



Proper steps in getting started:

- Assess the current fish population
- Remedial stocking may be an option for unbalanced populations
- Reclaiming entire fish population



Bass – Bluegill Pond Advantages

- Ponds may produce 300 lbs of fish per acre per year without additional inputs
- May be able to use already established ponds
- Low cost method of fish production
- Self sustaining
- Environmentally friendly

Stocking self sustaining bluegill and largemouth bass populations is a widely accepted fisheries management practice

- Swingle and Smith conducted the initial research at Auburn University in 1930's to 1950's
- Practice adopted by many state fish and game agencies



How to determine if the fishing is good? **Fish the Pond!!!!**

- Most ponds are under-fished!
- Determine quality of fishing by fishing!



Test seining to determine fish population balance

- Conducted during summer or fall
- Should see relatively low numbers of 3-5 inch long bluegill compared to larger and smaller bluegill
- No unwanted species



Young of year present?

- Both species should be present
- Larger fish may be caught check their overall condition



Species you don't want!



Problems: Unbalanced fish populations

- Bluegill crowded – too many small bluegill a few, often hard to catch largemouth bass
- Bass crowded – many small bass often in poor condition, but may produce large bluegill
- Unwanted species – may result in stunted populations of small fish

Do not over harvest largemouth bass!

- Stunted bluegill populations will result!
- May require remedial stocking of bass
- Rotenone treatment



Lots of frogs and crawfish in your pond?

- Often an indication of no or few bass



Reclaiming ponds with Rotenone

- Restricted use pesticide
- Works best at water temperatures of 60°F
- May take 1-4 weeks to dissipate depending on water temperature
- 1 to 2 mg/L treatments are common
- Cost ~ \$90.00/gallon



Quality fishing may be difficult to achieve in some ponds due to:

- Excessive depth
- Low fertility, acid soils
- Rapid water exchange
- Extensive in-pond structure or cover
- Poor security
- Size, too large or too small
- Conflicting uses



Optional inputs to increase fish production to 400 lbs/acre, or more

- Agricultural limestone
- Gypsum
- Fertilizer
- Prepared fish feed
- Aeration



Agricultural Limestone

- Add if total alkalinity of water is less than 30 mg/L
- Pond mud should be near pH 7.0
- Purchase area requires ~ 3 to 4 tons per acre
- Have pond mud tested
- May be hard to get in small quantities.



Gypsum or CaSO_4

- May clear turbid water
- Add when total alkalinity exceeds hardness



Fertilization Program – Only if the Pond will be fished hard!

- Check for lime requirement
- No vegetation problems
- Apply every 2-3 weeks during spring once water temperatures reach 60°F
- Liquid is easiest to dilute and apply
- Look for transparency of greater than 24 inches and re-apply
- Continue through October
- Apply year after year



Feeding Fish

- No more than 25 lbs/acre/day without aeration
- Largemouth bass have to be feed- trained early in life
- Everything else will eat it!
- Use a complete feed
- Do not use moldy feed



Adding pond structure or fish habitat

- Not generally a good idea in ponds less than 2 surface acres
- Mark structure with a buoy and use the types that can be removed from a small boat



Fence off livestock, or allow limited pond access where gravity fed water tanks can not be used!



Aeration – Good Insurance!

- Aerates and helps de-stratify ponds during warm months
- Can be put on a timer
- Provides a refuge for fish when dissolved oxygen becomes low



Oxygen stressed fish



Turtles don't hurt ponds!

- Adult sliders eat plants
- Snapping turtles eat water fowl but will not eat many fish
- All are hard to keep out!



Pond Management

Things to avoid:

- Shallow areas less than 2.5 feet when building ponds
- Depth over 8 or 10 feet if possible
- submerged "structure" for fish in ponds less than 2 acres
- Catfish spawning containers in small ponds
- Fish from other ponds or bait buckets
- Excessive nutrient loading
- Do not over harvest bass
- Do not apply pond algaecides or herbicides during hot weather

Things not to do.....



Things to do....



Things to do:

- Fish the pond!
- Keep catch and other management records
- Manage vegetation and water quality
- Control fishing access
- Control shoreline vegetation
- Check the pond often and throughout the year
- Make the pond and its surrounding environment an enjoyable place!

Steps to control aquatic vegetation

- Identify plants or algae
- Other pond uses?
- Physical nature of the pond
- Water chemistry



Methods of control

- Mechanical – mowing, cutting, pulling
- Chemical – liquid, granular
- Physical – winter draw-downs, deeper ponds, fertilization
- Biological – triploid grass carp for soft stemmed vascular plants and branched algae.

Filamentous algae control

- Copper sulfate
- Check water alkalinity
- Greenclean
- Diquat
- Do not treat whole ponds during hot weather



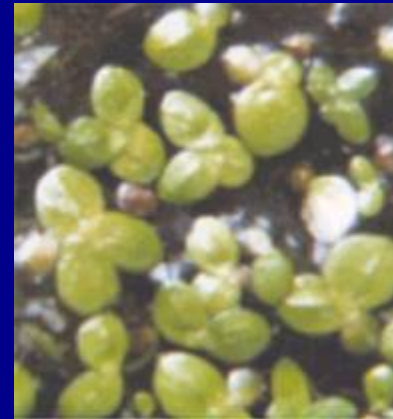
Cattails, Rushes and Sedges

- Spray with glyphosate
- 2,4-D
- Isopropylamine salt (Habitat)
- Remove before they get well established!



Duckweeds

- Hard to control
- Fluridone-expensive!
- Diquat
- Habitat
- 2,4-D liquid
- Reproduces very rapidly
- Reduce nutrient load in water



Water Lily and Watershield

- 2,4-D granular
- Glyphosate
- Fluridone
- Isopropylamine salt (Habitat)



Watermeal

- Fluridone
- Hard to control
- Reduce nutrient loading if possible



Water Primrose

- 2,4-D
- Glyphosate
- Isopropylamine salt (Habitat)
- Try mechanical removal



Pondweeds

- Triploid grass carp
- Diquat
- Endothall
- Fluridone



Triploid grass carp

- Eat branched algae and soft stemmed vegetation
- Stock 0 – 50 per acre
- Grow quickly!
- Should be 10 inches in length



Expert advice is of great comfort – even when it's wrong...

