

Managing Fish in Stormwater Ponds

Ben Powell
Clemson Extension



Fish are extremely important to aquatic ecosystems!

Maintain biological balance of the aquatic food web

Serve as a functional reservoir for nutrients (and toxins)

Provide control for aquatic weeds and biting flies

Food source for wading birds, osprey, bald eagles, and otters

Added recreational resource to the community

Stormwater ponds are not designed to be ideal habitat for fish

Stormwater ponds...

- **not good structural design for fish**
(fluctuating water levels, drought)
- **runoff not a good water source for fish ponds**
(undependable, polluted)
- **prone to low oxygen, toxic algae, and dramatic temperature swings**

The correct fish provide enhanced management for stormwater ponds

Weed Control

Control of biting flies (Mosquitoes)

Other ecosystem services

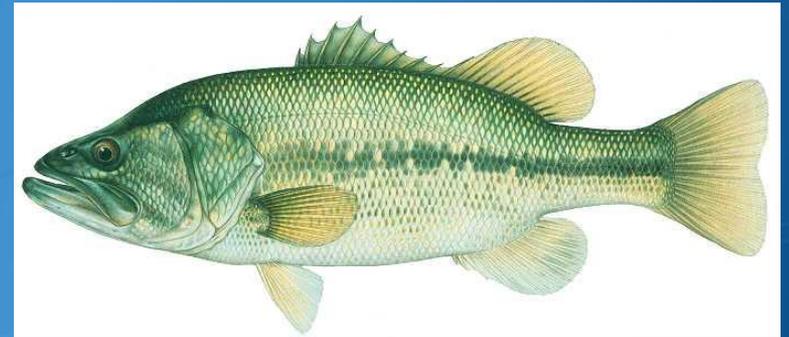
ECOLOGICAL INTEGRITY

What are the “right” fish ?

Bluegill / Redear Bream



Largemouth Bass



Triploid Grass Carp



Tilapia



Are there any other suitable fish?

NO

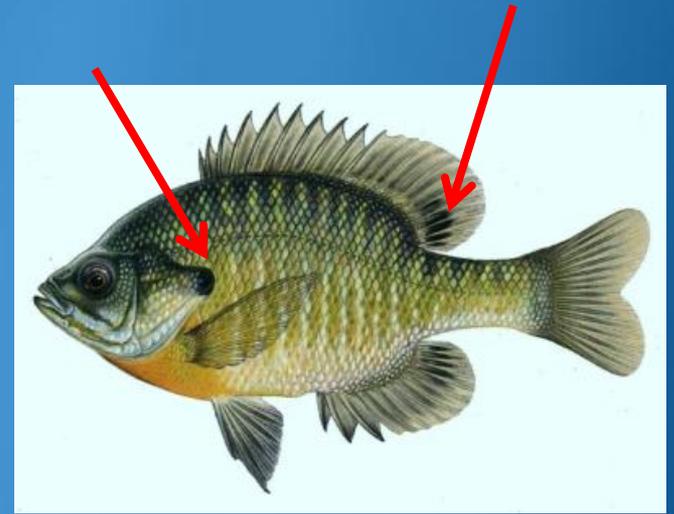
Problems with other fish...

- Catfish and Crappie are top predators that will upset balance between predators and prey
 - Same goes for striped bass, spotted bass, white perch, and others
- Common carp / Israeli carp disrupt other fish and stir sediments = muddy pond
- Shiners and other bait fish may become invasive
- All non-native aquarium fish are potentially invasive

Bluegill Bream

Lepomis macrochirus

- Forage for largemouth bass
- Eat primarily invertebrates and small fish
- Important for controlling biting flies
- Stock: 500 per acre in fall, early winter
 - May stock only bluegill (never just redbreast)
 - Stock 3:1 bluegill to redbreast when stocking both

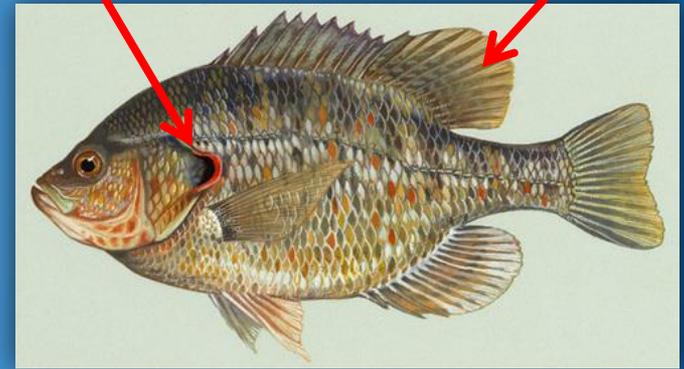


Redear Bream

“Shellcracker”

Lepomis microlophus

- Another good forage for bass
- Eat mostly invertebrates & fish
- Larger more aggressive than bluegill, less likely to stunt
- Never stock alone, only stock with bluegill, 3:1 ratio
- Stock in late fall/winter
 - Max. 125 per acre unfertilized



Largemouth Bass

Micropterus salmoides



- Top predator that feeds on smaller fishes (bream) frogs, snakes, and invertebrates
- Excellent recreational resource
- Prone to bioaccumulation of heavy metals
- Stock: 50 fish per acre in spring or early summer only after bream have been stocked
 - Should be at least 4 inches in length

Try to maintain a 10:1 ratio of prey (bream) to predators (bass)

Harvest data can be informative

Check fish sizes, age classes, dimensions

Seining in July might be useful

be careful, stormwater ponds are not good for swimming
(bacteria and other pathogens)

Triploid Grass Carp

Ctenopharyngodon idella



- Large herbivore that feeds on submersed aquatic plants
- Most cost effect control for submersed weed problems, 5 to 8 years good control
- Sterile, must be restocked every 5-8 years
- Stock: 20 fish per acre of vegetation, min 10" in length
 - Maintenance stock of 5 fish per acre of pond

More on the Triploid Grass Carp



- Must get free permit from SC DNR
 - Provided at sale by licensed dealer
- May be prone to predation
 - Large bass, otters, osprey
- Illegal to remove from public waters
- Take at least one year to begin effective control

Blue Tilapia

Oreochromis aureus



Nile Tilapia

Oreochromis niloticus



- Blue eats filamentous algae (& duckweed/watermeal)
- Nile eats other submerged plants
- Both eat invertebrates
- Excellent recreational resource
- Good forage for bass

More about Tilapia

- Stock: up to 400 per acre with severe weeds
preventative stock = 200 per acre,
4" to 6" fish
- Tilapia are tropical fish, death < 55° F
 - Must be restocked every spring (late April/early May)
- Mouth-breeders, reproduce well in ponds
- SC DNR requires free permit to stock tilapia

Harvesting Fish from SW Ponds

- Bass and bream should be harvested from ponds to maintain balance
 - 40 lbs of bream/acre/year
 - 10-15 lbs of bass/acre/year
- Fish from SW Ponds may not be suitable to eat
 - Studies indicate fish bioaccumulate toxins
 - SW Ponds prone to high levels of pollution
 - Little information about fish from SW ponds
 - Harvested fish may be composted for use in garden
- Wash hands thoroughly after handling fish

Other fish management concerns

- NEVER FEED FISH in sw ponds!!!
 - Feed is fertilizer, increases algae/weed problems
- Invest in fish... then invest in circulation
 - Diffusion aerators serve as insurance against a fish kill
- Fish kills usually due to low oxygen
 - Mid-summer – fall, large fish dying
 - Just after herbicide application, algae bloom
 - Fish kills from other reasons often affect small fish first

Early spring bream death

- Low numbers of large bream dying in March-April, with large necrotic wounds
- Don't fret, natural phenomenon
- Low food during late winter leads to cannibalism and infected wounds
- Will subside as season moves-on



Invasive Species

Island Apple Snail 2008

Others not yet here



Invasive Natives



QUESTIONS?

